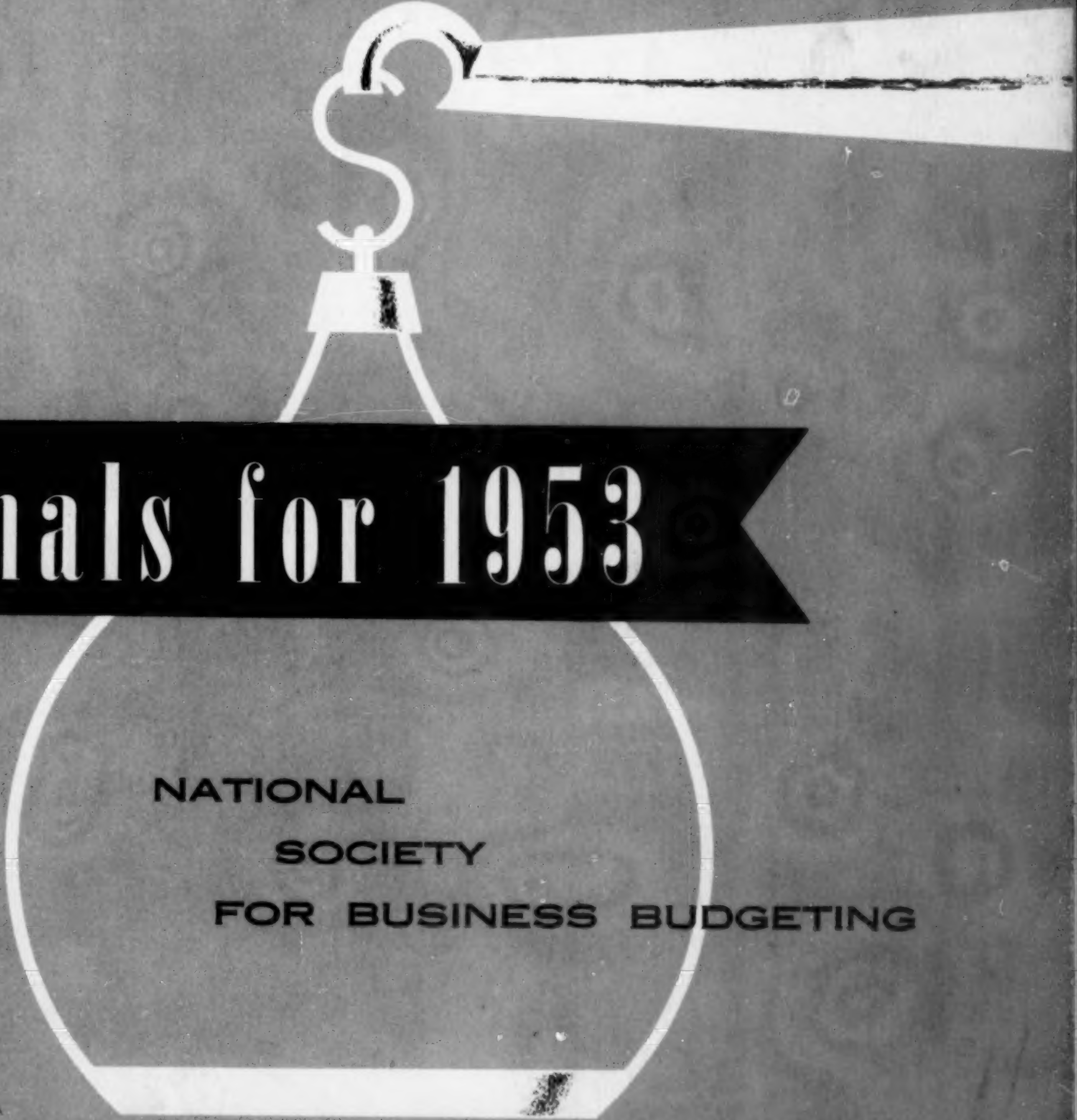
annals for 1953



NATIONAL
SOCIETY
FOR BUSINESS BUDGETING

EDITOR'S PREFACE

As an alternative to the publication of the proceedings of the Annual Conference of the National Society for Business Budgeting, it was decided this year to publish instead a yearbook or annals, which would record in relatively permanent form, a somewhat broader cross-section of the work of the Society for the year. For this purpose the Annals Committee has selected certain materials, chiefly from the Conference proceedings and from the monthly "Technical Notes," relating to two broad themes or general issues in the field of budgeting. The selected materials are not intended to constitute a fully representative sample of the year's activities; they are rather intended to illustrate the continuity of theme and the cumulative value of materials presented at chapter meetings, in the Society's publications, and at the Annual Conference.

As the program at the conference in Milwaukee progressed it became apparent, to those in attendance, that some of the presentations pertained to the same broad issues or themes, and complemented or supplemented each other, in a way that would not have been anticipated from reading the printed program. The clearest case of such a relationship involved Joel Dean's discussion of capital budgeting and the reports made by Fred Haviland, Jr. and Horace Hill, Jr. on the following day. As pointed out by W. J. Edmonds in the President's address, a second general theme common to three or four of the conference presentations pertained to the relations of budgets to people or the problem of "selling the budget" through a recognition of the human relations problems involved in developing a budget and making it work. Upon a review of the monthly technical notes, and some of the talks presented at local chapter meetings, it was found that the same two issues or themes were involved in some of the outstanding material presented in those forms.

It was, therefore, decided to develop the "Annals" for this year around these two themes:

1. Long range planning and capital budgeting, and
2. Selling the budget in terms of its relation to people and to the planning and control of operations in a realistic, practical way.

These themes are respectively the subject matter of Parts II and III of the present publication. Part I, an "outline of Industrial Planning," taken from the Technical Notes, serves as an introduction, setting forth the relationship of both capital budgeting and current budgeting to financial and industrial planning in general. Yale Brozen's conference discussion on "National Economic Factors in Business Budgeting" is presented as an appendix in response to the many requests received from members of the Society for a copy of Dr. Brozen's address.

W. D. Knight
University of Wisconsin
August 1, 1953

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ANNALS OF THE NATIONAL SOCIETY

for

BUSINESS BUDGETING

1952 – 1953

Selections from the Proceedings of the National Conference, Pfister Hotel, Milwaukee, Wis., May 14-15, 1953, and from the Technical Notes for the year 1952-1953.

Annals Committee

H. C. Mason
W. J. Edmonds
W. R. Bunge
C. L. Lineberger
A. H. Weiss

Annals Editor: W. D. Knight

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PART I

INTRODUCTION

PLANNING, MANAGEMENT, AND BUDGETING

OUTLINE OF INDUSTRIAL PLANNING

by W. J. Edmonds*

It is the purpose of this paper to describe planning in an industrial corporation and the integration of planning with the whole job of management, including budgeting. Testing through economic and financial analyses and integration by financial planning is the keynote of the discussion. The financial plan is a means of bringing all plans into focus in order to provide a basis for fundamental decisions.

What Is Planning?

Management of an industrial enterprise requires planning, decision, action and control. These management activities result in the development, conservation, and utilization of the basic forces of production of: (1) scientific and technical knowledge, (2) manpower, and (3) capital, in the supply of desirable goods and services. The success of industrial management is to be found in the industrial products, whether they be useful and desired commodities or services for the consumer, or by-products of social benefit achieved through additions to the general funds of scientific knowledge, productivity or capital. What is desired is not just immediate "dollar profits" but sound growth and development for the future.

Planning for business means thinking ahead; thinking about the problems of one's company and its customers, about the particular plans and projects under consideration and about the broader economic problems. Planning is a means of exercising foresight which, though limited, is worth the effort.

Industrial planning is a long-range process shaped through day-by-day decisions of management. While industrial plans cannot be set up in the form of a timetable, the various plans that are made in a corporation must be coordinated and integrated with due consideration to the lag between planning and accomplishment. The attached chart indicates a generalized approach to the planning around each of the principal factors. The objectives of each planning activity and the connection between the long-range planning, current programs and control measures are indicated. The discussion which follows is outlined by this chart.

Corporate Planning

Planning begins with the corporate entity – its reputation or social acceptance and its structure and management. In a discussion of planning for an existing corporation, these topics can be dealt with only very briefly.

Social Acceptance

Earning and maintaining a favorable environment of public opinion in which to operate requires planning with respect to the many aspects of public relations affecting the company itself and, in addition, the assumption of the social acceptance of business. For example, a company's reputation with the public may play a large part in its ability to obtain capital. It is the job of management to gauge the impact of its policies upon stockholders and the public, to test public acceptance of its policies and actions, and to make plans for public information designed to cultivate and maintain favorable attitudes toward the company.

Corporate officers and directors find themselves occupied to an increasing extent in this field. They devote much time to such things as the study of governmental developments of special concern to industry, and to various activities designed to keep them informed on current thinking by various groups of the public. They are asked to contribute more and more of their talents to community affairs. To find time for such outside activities, if the business is to achieve its full success, top executives must further delegate responsibilities for operating and planning.

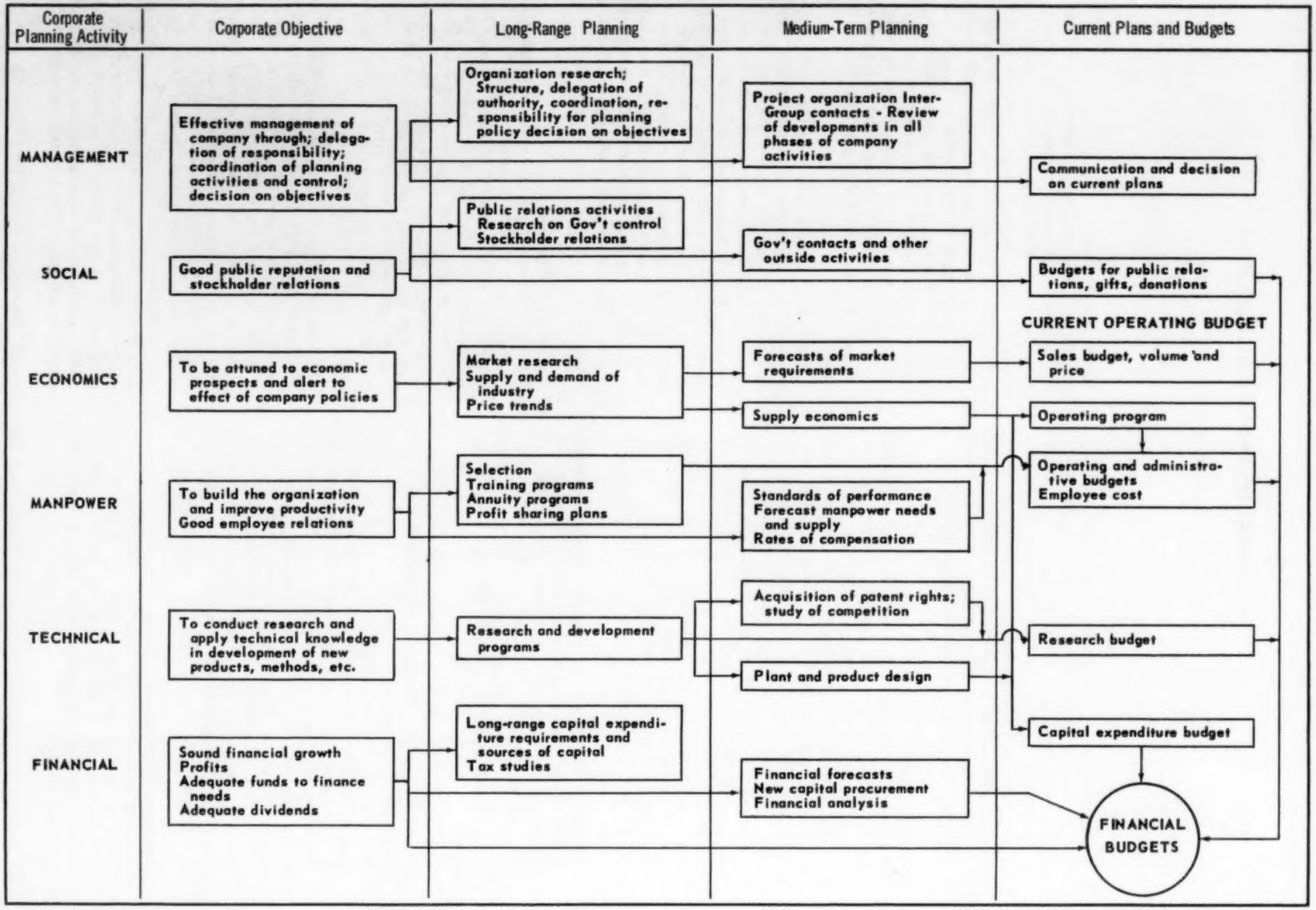
Organization Planning

Finding adequate time and talent for the increasing demands upon top management compels it, first, to spend more time in organization. This may be called a conscious building of a community of people interested in the same objective – the success of the company of which they are a part. The delegation of authority for action, responsibility for planning, and the establishment of adequate means of communication of objectives and coordination are the purposes of this organization planning.

A tool of organization planning which is being used more and more is decentralization. Decentralization can be practiced in various ways and degrees. It could include, for example, dividing the existing organization into many or additional subsidiaries. In essence, however, it means the delegation of all of the responsibility for the success for some part of the enterprise to a management team having the full confidence and support of the top corporate management. Central management can offer policy guidance and services to the decentralized phases, particularly in the fields of research and planning, which perhaps the decentralized group could not afford on its own. The central organization may in-

*Reproduced from Technical Notes, Vol. I, No. 6, May, 1953. Mr. Edmonds is head of the Economics Department and Assistant to the Controller of the Standard Oil Company (New Jersey). For 1952-53 he was President of the National Society for Business Budgeting.

OUTLINE OF INDUSTRIAL PLANNING ACTIVITIES



clude advisors in various special fields. These two trends – the increasing occupation of top business management with the social and public needs of the business, and the tendency towards decentralization – emphasize the need for the development of executives, well rounded with a knowledge of planning as well as of operation. It emphasizes the need for clarification of the function of planning and its delegation between line and staff organizations.

Organization of Planning

The function of planning – if it is to be successful – must be built from the bottom up and tuned to the policies which come from the top down. The integration of the various planning activities with operating activities at each level, and the transfer of the results of planning, should follow the organizational scheme. Third, it should include, close to top management, coordinating and advisory groups.

The first job of central coordinating groups is to see that the actions and plans for all areas of the business are reported to top management in such a way as to release management's time for other activities and yet provide a background and basis for their thinking about planning and decisions. This means analyzing and condensing operating and financial reports; analyzing plans for the future to point up the problems and decisions requires communication to top management of findings of studies in the fields of economics, scientific developments and other areas that have an important bearing on the future of the company; and, finally, reporting of all plans in a form which integrates them and shows the company's financial picture – the financial plan.

It is taken for granted that when such reports reach top management they will represent teamwork. It is assumed that all have been consulted who should be, and that the reports embody the integrated thinking and conclusions of the whole company group.

The following discussion of the several parts of the planning job includes the work done by operators and specialist wherever located, the analyses by which it is checked economically and financially, and the reporting to the top. Allocation of responsibilities for the work is not discussed in detail since this would follow organizational lines and would be designed with due consideration of scope, etc. Finally, integration of the over-all scheme into the financial plan is presented.

Technical Planning

Industrial planning for the development, conservation, and utilization of technical and scientific resources is a comprehensive job demanding a variety of talents – scientific, managerial and analytical. It includes the conduct of scientific research to promote the growth of the company, the acquisition of patents, designs and other technical "know-how" and, frequently, the conduct of basic scientific research to add to the fund of knowledge from which the company draws. It includes harnessing of all available technical research to promote and improve the efficiency of labor, to develop new products, and to promote the welfare of the company generally. It cannot be completely assigned to a technical organization for it involves all levels of management.

Plans to promote effective utilization of scientific research include education through communication and discussion, and regular and continuing analyses and appraisals. In many companies the research and development budget is a principal means of clarifying the objectives of the company in the field of research. It facilitates the communication of ideas and their dissemination at executive levels. The principal applications of research and developments in technology of production find their fruit through the orderly procedures of analyses leading to capital budgeting – and financing – through financial planning. This chain reaction of planning, starting with technical research, is the key to industrial progress, and success in the integration of these phases of planning could be the basis of financial success.

At this stage of the business cycle new products and new processes assume great importance. New products about to come on the market are the result of technical research that may have started twenty years ago – an activity that has been harnessed by intelligent management with management objectives and teamed up with capital. The resulting products are an effective demonstration of willingness on the part of management to assume a business risk.

However, even though these products are popular today and are selling at a price to yield a good profit, their success may be short-lived unless a substantial portion of the current profit is put into the research and development work from which the products were generated.

Economic Planning

The phrase "economic planning" came into disrepute in the early '30's when it was associated with a variety of efforts to bring the U. S. out of an economic depression. As applied to corporate planning, the term has at least three connotations: (1) that the business be developed with due regard for the impact of exterior economic forces, (2) that plans be based on economic utilization of manpower, technique and capital, and (3) that management be alert to the impact of its own action on the economic scene, so that the company will contribute to rather than disturb the national economy.

Market Research

The business must be developed with respect for the impact of economic forces which determine the need for its products. These include possible change in demands of consumers, the demand for capital goods, and, presently, the possibility of military purchases changing rapidly in quantity or form.

Long-range market research is the principal guide to economic planning. It has grown and has been aided by government services and privately supported research organizations. Market research, like technical research, must be tailored to meet

the needs of a company. Frequently it may be found that while indices for total business are helpful guides in determining the course of a company, these must be supplemented by realistic studies based on contact with direct consumers. Measure of demand for a company's product beyond the current year involves some study of the competition. The possibility of supply either exceeding or being insufficient to meet the demand upon an industry is the most essential point, for it will indicate whether price reductions are to be anticipated or if added capacity is to be desired.

The amazing postwar growth of markets for most commodities has caught many companies short, and just now capital expenditures are beginning to taper off as plants are completed and consumer demands for new regular lines are met. In most industries building additional capacity for old lines is decreasing, and emphasis is more on additions to meet newer demands developed through a consumer acceptance of new products or qualities, and on cost reduction facilities.

Evaluation of proposed capital expenditure on projects that will take three or four years for completion requires a projection of the particular demand for which the expenditure is intended. Building reasonably reliable organization, manpower and financial programs for the future requires a study of demand for all the products which the company would expect to sell. These combined needs have established a fairly general practice of estimating product needs three to five years ahead. These plans are as comprehensive as the scope of the company. Integration of all supply sources and markets, and the indication of the amount and location of additional supplies, is the principal objective.

Internal Economic Research

Internal economic research may be defined as the analysis of the various opportunities to meet the market demand, a complete statement of the problem in terms of raw material, operating and investment costs, and careful appraisal of all the differences in financial terms so as to hold the utilization of the basic forces and, therefore, the costs to a minimum. This involves analysis of both short and long-range alternatives, so as to make possible the correct choice. The reporting of these analyses should indicate the final impact which is likely to be made upon the company's financial situation by the change in cash position resulting from the acceptance of one program as compared to the other. The period covered should extend far enough ahead to afford a sound basis for judging the attractiveness of the proposal.

A method of reporting supply requirements that points up shortages and overages by products and by areas is the foundation for such economic research. The balance, or lack of balance, for several years ahead would be indicated by this report, which might be called the supply program.

Coordination of sales and production is primarily an operating responsibility, but the success achieved reflects the accuracy of the longer-range demand forecasts and the adequacy of longer-range plans for supply. The program or budget for the current year would usually be an extension of the longer-range program. It would indicate seasonal variations between supply and demand and the production required to meet these – the inventory problem. The degree of variation in demand and the value of the product sales to the company establish the scope and frequency of program review. In localized areas such a review might take place weekly.

The third phase, testing the impact of the company's plan upon the whole economy, is beyond the scope of this article except for the brief references made to it earlier.

Manpower and Management

When the entire expenditures of American industry are lumped together and transfers of raw materials between companies are eliminated, it is shown that 65 per cent of the total goes for compensation to employees. Clearly employee cost, including both current payments and commitments, is the largest item of operating expense. Management must plan ahead for selection, training and utilization of employees with the objective of compensation that is both adequate and commensurate with production.

In recent years there has been a growing realization of management's responsibility for the careful selection and planned development of personnel. This has focused increased attention upon training programs, with the objective of assuring the fullest development of the capacity of employees and the free flow of their ingenuity. Excellent results in improved productivity are reported as a result of training on the job at all levels.

The term "executive training" is a popular phrase at meetings of men interested in industrial planning. It is recognized that unless management perpetuates itself, the business cannot live. This type of planning can no more be completely centralized than can others. It must flow up rather than down, and be coordinated at the top.

Training can start only when the supervisor knows his employees and, through careful reporting, brings out the need of training. Training must reach then to lower and lower levels. First-line supervisors could become managers of the future.

A man of high integrity and ambition who has survived this selection process, has achieved some success as an administrator, and gets along well with people is ready for further tests as to his eligibility for executive training. A very important test is his knowledge of the company. Some companies try to provide that by exposing employees to various activities of the concern through brief orientation courses. However, working on the job has been found much more successful. Actual work in a central planning division, such as an economics department, budget department or financial analysis division, provides an opportunity for promising young men to obtain an over-all perspective of the company that

is unequalled. Here you have a merging of two important planning activities – planning for executives of the future, and planning for the company.

Industrial management today must also give careful thought to employment needs several years ahead, taking account of the outlook of the business and the impact of capital expenditures for improvement in productivity, as well as of the human supply factors of life span and turnover. This planning is best conducted on a plant-by-plant and area basis, with coordination to develop inter-plant and area transfers. Such planning for three or four years ahead is a necessary basis for good budgeting.

The factor of employee cost in the operating budget for the year is the financial result of the many steps of employee planning – the selection of many years before, the training, the technological improvements through capital expenditure, and the satisfaction of the employee with his compensation. It should reflect the intelligent application of available manpower to the current job. Analysis of consequent deviations from the budget will present a financial measure of the success of the day-by-day personal planning.

Financial Planning

Financial planning involves plans to increase the supply and plans to satisfy the demand for capital in the industrial enterprise. All plans leading to decisions and actions taken with the objective of improving the financial result could, in a sense, be included in the broad term "financial planning." It is, therefore, an activity in which many participate.

The financial plan of a company integrates all of the other planning activities. It brings out whether the principal objective of industrial planning, that of improved profits, is to be realized. It shows whether the required investments can be made from available funds or if new money is required. Prospective suppliers of capital want to see a financial plan.

With the report of the financial plan to top management, the complete job of planning is brought into focus. Some supplements will be required on the operating program, the economic outlook, capital expenditures, research and development plans.

The financial program will be reported through the chief financial officer. Following this channel does not mean that coordination is to be accomplished only at the top. The success of the whole planning effort and its acceptance by top executives depends to a large degree on the success of coordination between all levels and the communication, from the top down, of management objectives.

Coordination is facilitated by the preparation and discussion of financial plans for various segments of the business. In a decentralized organization, a complete financial program embodying the agreed plans of a particular segment and its review and approval by the management of that division, is an important aid to the effectiveness of decentralized management. In this way the responsibility for planning is placed in the hands of the management responsible for the success of the decentralized unit. Financial policy decisions of the top corporate management and the financing of programs are greatly facilitated by such area studies. Supplementary and background information indicating the long-run return on capital invested and analysis of the impact of economic trends and comprehensive factors in the area, contribute to the soundness of decisions regarding the proposed financial plans of such a unit.

The financial plan thus brings into focus all phases of management. It is a test of the organization's success in achieving coordination and communication. It requires, moreover, regular and fundamental review of major policy with respect to all important questions facing the company in its various operations.

Conclusion

It is hoped that this brief outline of planning will serve to forge, in the thinking of the reader, connections between long-range planning, decision, action, budgeting and control of current operations. Hopefully, it will emphasize the necessity of planning in all important areas of the business. It is suggested that the over-all planning scheme be scrutinized to see if gaps exist, so that steps to close them may be considered. If it has been made clear that planning isn't everything, nor is budgeting, it should be evident also that planning and budgeting are not only important aids to management but important parts of the management process.

PART 2

LONG RANGE PLANNING AND CAPITAL BUDGETING

LONG RANGE PLANNING

A Case Study in The Control Industry

by Fred R. Haviland, Jr.*

The Basic Concept of Long Range Planning

There is no more important function of management than the maintenance of perspective concerning the implications arising from the anticipated future growth of a company. In fact, a long range plan and the attendant problems related to the accomplishment of the objectives of such a plan are the essence of management. Once that program is laid down, daily decisions of all classifications can be made much more intelligently in terms of the degree to which they implement the long range objectives. Without the perspective gained through this long range look, operating programs cannot be truly effective. The planning function provides the perspective and the long term objectives so that operations can be budgeted and controlled accordingly. Long range planning is a must to get away from the "this year to date" – "last year to date" philosophy.

The Objectives of Long Range Planning

The primary objective of this long range planning effort is to anticipate and program the future requirements for each major component of our business. It is essential that the nature and magnitude of the jobs that have to be accomplished in order to provide adequate facilities, personnel, capital and the like should be constantly before the management as a whole as well as the heads of the component divisions, if such exist. By estimating growth in the various subdivisions of a business, it will be possible to plant what will be required in the way of procurement of plant, tools, engineering, personnel and so forth to make that growth possible. And by describing the size of the total job to be accomplished, it will be possible to develop more realistic fiscal planning and budgeting by showing the amounts of additional capital that will have to be obtained in order to make it possible to accomplish the growth objectives. In addition, it will be possible to study these requirements for the creation of whatever additional facilities are necessary and to relate them to a calendar which will take into consideration the lead times necessary for their procurement in time to be of maximum benefit to the accomplishment of the long range objectives.

By studying, estimating and reporting on these types of information on a continual and regular basis, it is possible to provide management with a continual flow of essential information which it will need in making decisions concerning the future of the business.

The Underlying Principle

The principle underlying long range planning is based on the concept that each of the various component facilities has a relationship to sales volume. By studying these relationships as they have existed in the past and the degree to which they have varied according to the volume of sales produced, it will be possible to estimate with acceptable accuracy the requirements for such facilities in the future. This process presupposes an ability to develop realistic and accurate long range sales forecasts. The development of such forecasts is by no means an impossible task; it becomes progressively easier to make accurate long range sales estimates as we develop more studied methods and gain more experience through a continual effort to improve in this regard.

Long Range Planning at Minneapolis Honeywell

Let us illustrate long range planning in terms of the way the planning process works at Minneapolis Honeywell. The Honeywell procedure is based upon detailed sales forecasts and upon the study of past relationships between facility and personnel requirements and consolidated sales. From these two factors it is then possible, by considering in some detail problems and prospects in such areas as sales, manufacturing, engineering, personnel and finance, to develop a realistic program to provide the facilities required for future growth and expansion.

The basic sales forecasts on a division and on a consolidated basis are illustrated in Charts No. 1 and 2, respectively. These sales forecasts are built up by major product lines or markets within each division, and are extended at least five years into the future. Also, because various manufacturing divisions contribute products to any given sales division, these forecasts are broken down by the plants which contribute to the sales totals for each division. The plant breakdown is illustrated in Chart No. 1, the divisional sales forecast; the breakdown by major product-lines is illustrated in Chart No. 2, the consolidated sales forecast. It will be noted that both charts contain forecasts for five future years (1953-1957) as well as actual sales for one or more past years.[1]

1 In the illustration shown the 1952 data at the division level happen to be estimates while the 1952 data at the consolidated level represent actual sales.

*Presented at the National Conference of the National Society for Business Budgeting, Milwaukee, Wis., May 14-15, 1953. Mr. Haviland is Director of Market Development of Minneapolis Honeywell Regulator Co. of Minneapolis, Minnesota.

Chart No. 1 – The Division Sales Forecast

MINNEAPOLIS - HONEYWELL REGULATOR COMPANY

____________________ DIVISION

ESTIMATED DISTRIBUTION OF ESTIMATED SALES - 1952 THROUGH 1957

(According to Plant and Other Source)

	Actual	Estimated					
	1951	1952	1953	1954	1955	1956	1957
1. TOTAL NET SALES	$	$	$	$	$	$	$
2. TOTAL PLANT LOAD	$	$	$	$	$	$	$
A. Minneapolis							
B. Chicago							
C. Wabash							
D. Brown							
E. Valve							
F. Micro-Switch							
G. Appliance Controls							
H. Canada							
3. OUTSIDE PURCHASES	$	$	$	$	$	$	$
4. OUTSIDE INSTALLATION LABOR	$	$	$	$	$	$	$
5. BRANCH SERVICE AND REPAIR	$	$	$	$	$	$	$

Chart No. 2

ESTIMATED AND ACTUAL *M-H CONSOLIDATED* SALES BY DIVISIONS 1946-1957

(*MILLIONS OF DOLLARS*)

	ACTUAL								*ESTIMATED***				
	1946	1947	1948	1949	1950	1951	1952		1953	1954	1955	1956	1957
TOTAL CONSOLIDATED SALES	45.9	60.6	57.6	72.8	109.3	135.2	165.7						
NON-DEFENSE BUSINESS													
APPLIANCE CONTROLS													
CANADIAN													
COMMERCIAL													
HEATING CONTROLS													
INDUSTRIAL													
INTERNATIONAL													
MARINE													
MICRO-SWITCH													
MERCHANDISE													
SERVICE & REPAIRS													
DEFENSE BUSINESS													
AERONAUTICAL													
ORDNANCE													

*** ESTIMATES BY LONG RANGE PLANNING COMMITTEE (1/6/53)*

Chart No. 3

ACTUAL AND ESTIMATED SALES AND CAPITAL REQUIREMENTS

(M-H CONSOLIDATED)

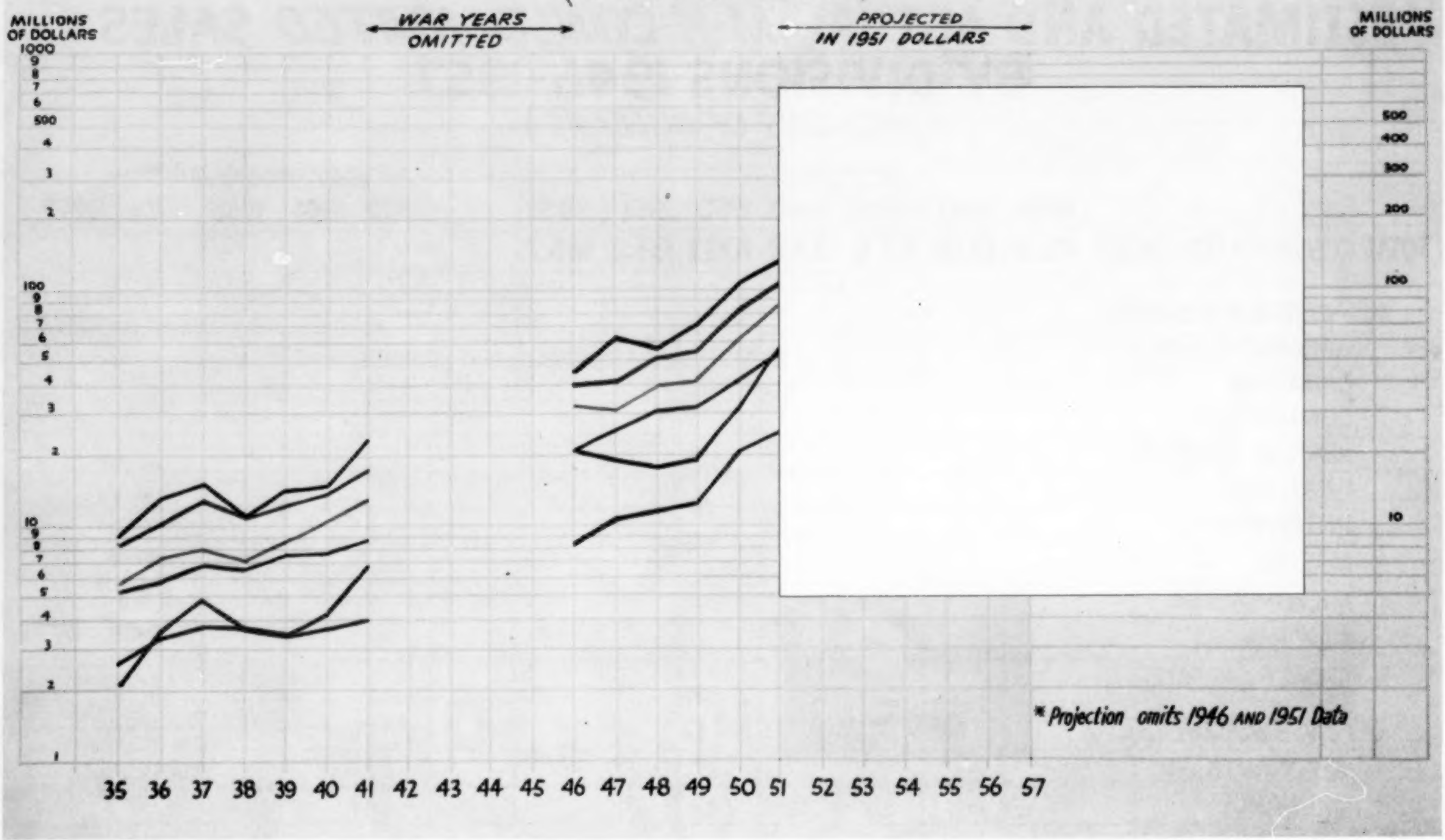


Chart No. 4

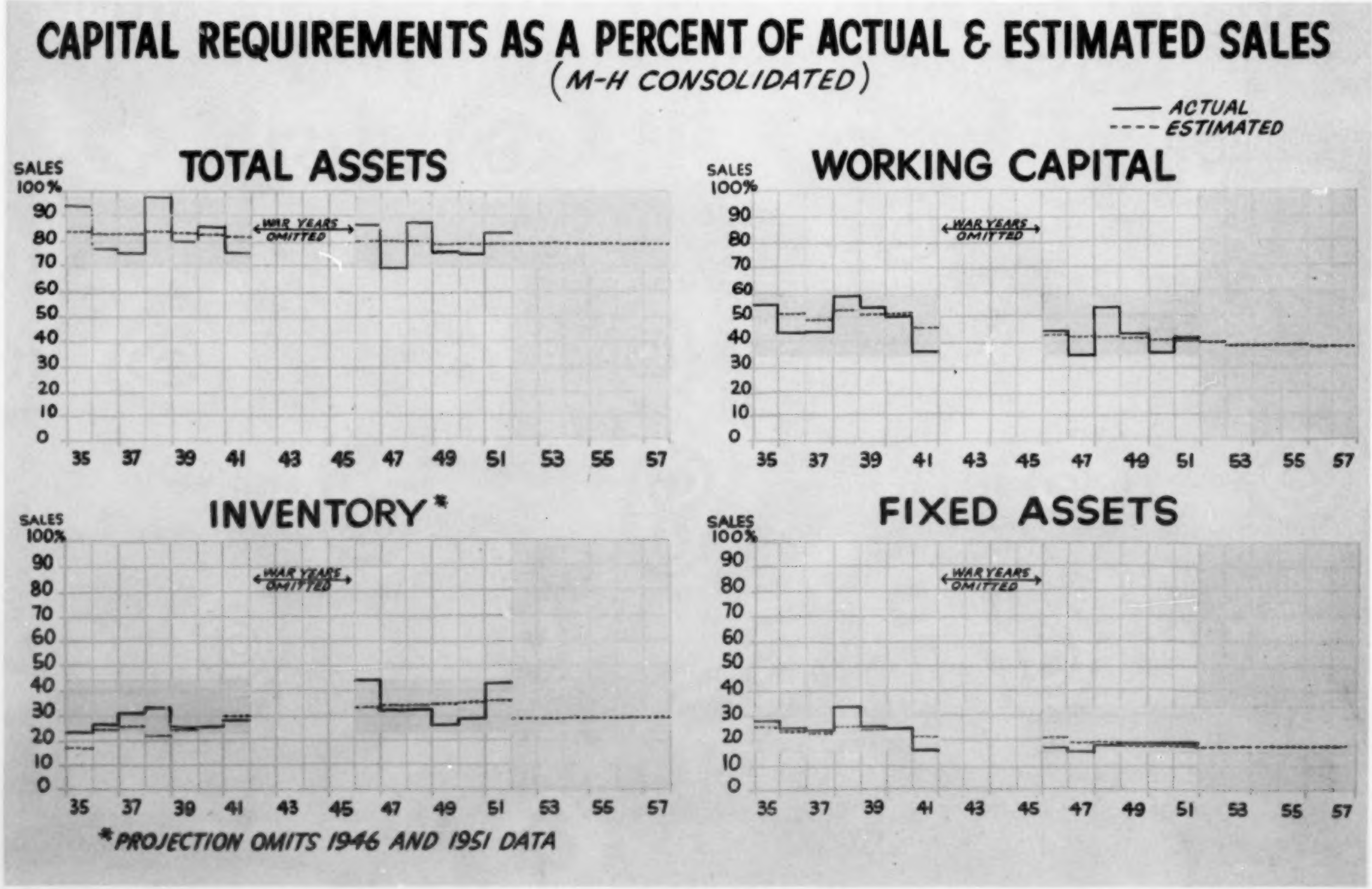
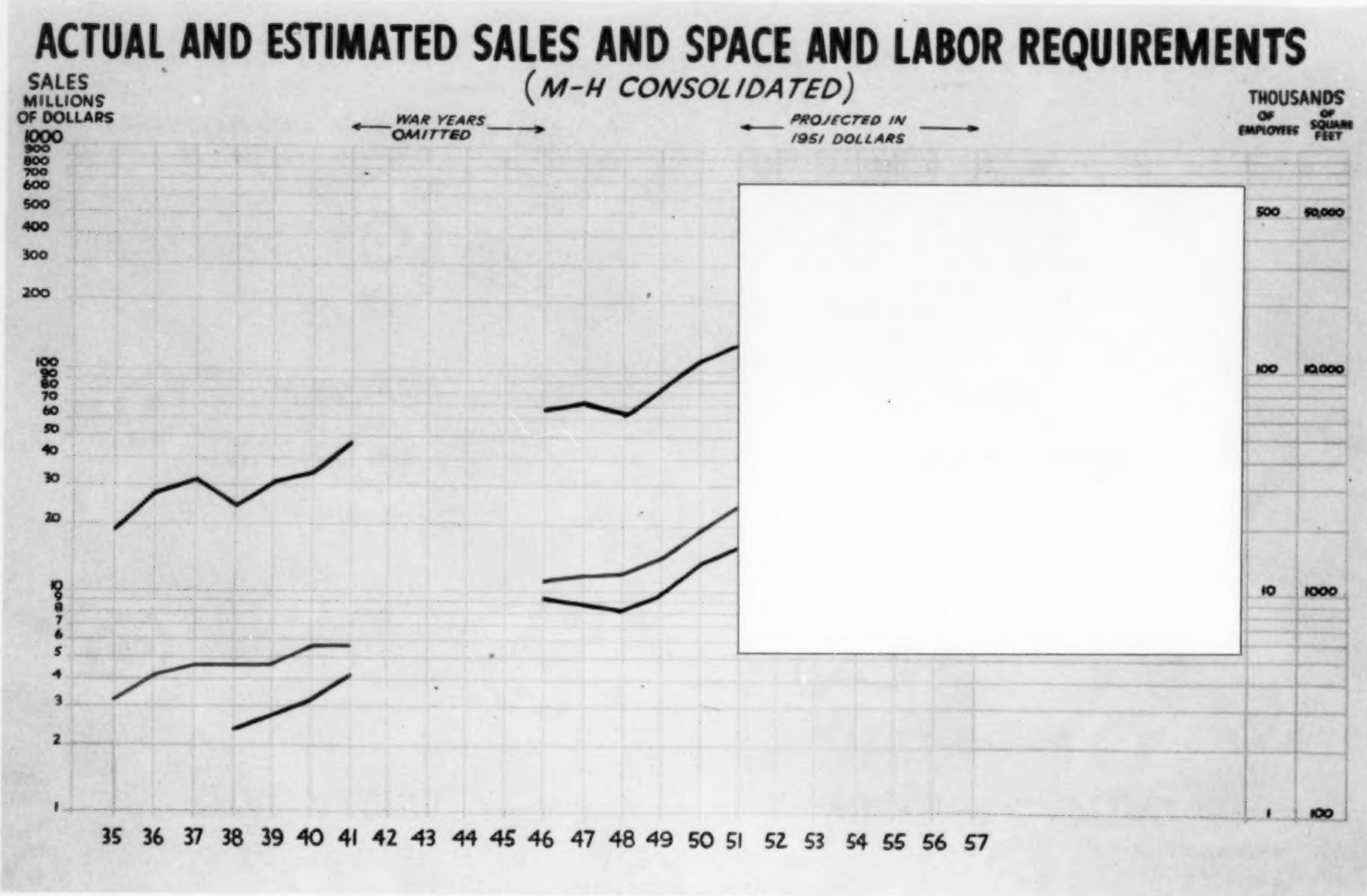

CAPITAL REQUIREMENTS AS A PERCENT OF ACTUAL & ESTIMATED SALES
(M-H CONSOLIDATED)
—— ACTUAL
- - - - ESTIMATED
TOTAL ASSETS
WORKING CAPITAL
INVENTORY*
FIXED ASSETS
SALES 100%
90
80
70
60
50
40
30
20
10
0
35 37 39 41 43 45 47 49 51 53 55 57
WAR YEARS OMITTED
*PROJECTION OMITS 1946 AND 1951 DATA

Chart No. 5


ACTUAL AND ESTIMATED SALES AND SPACE AND LABOR REQUIREMENTS
(M-H CONSOLIDATED)
SALES
MILLIONS
OF DOLLARS
WAR YEARS OMITTED
PROJECTED IN 1951 DOLLARS
THOUSANDS
OF EMPLOYEES
OF SQUARE FEET
1000
900
800
700
600
500
400
300
200
100
90
80
70
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10
9
8
7
6
5
4
3
2
1
500
100
10
1
50,000
10,000
1000
100
35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57

Chart No. 6

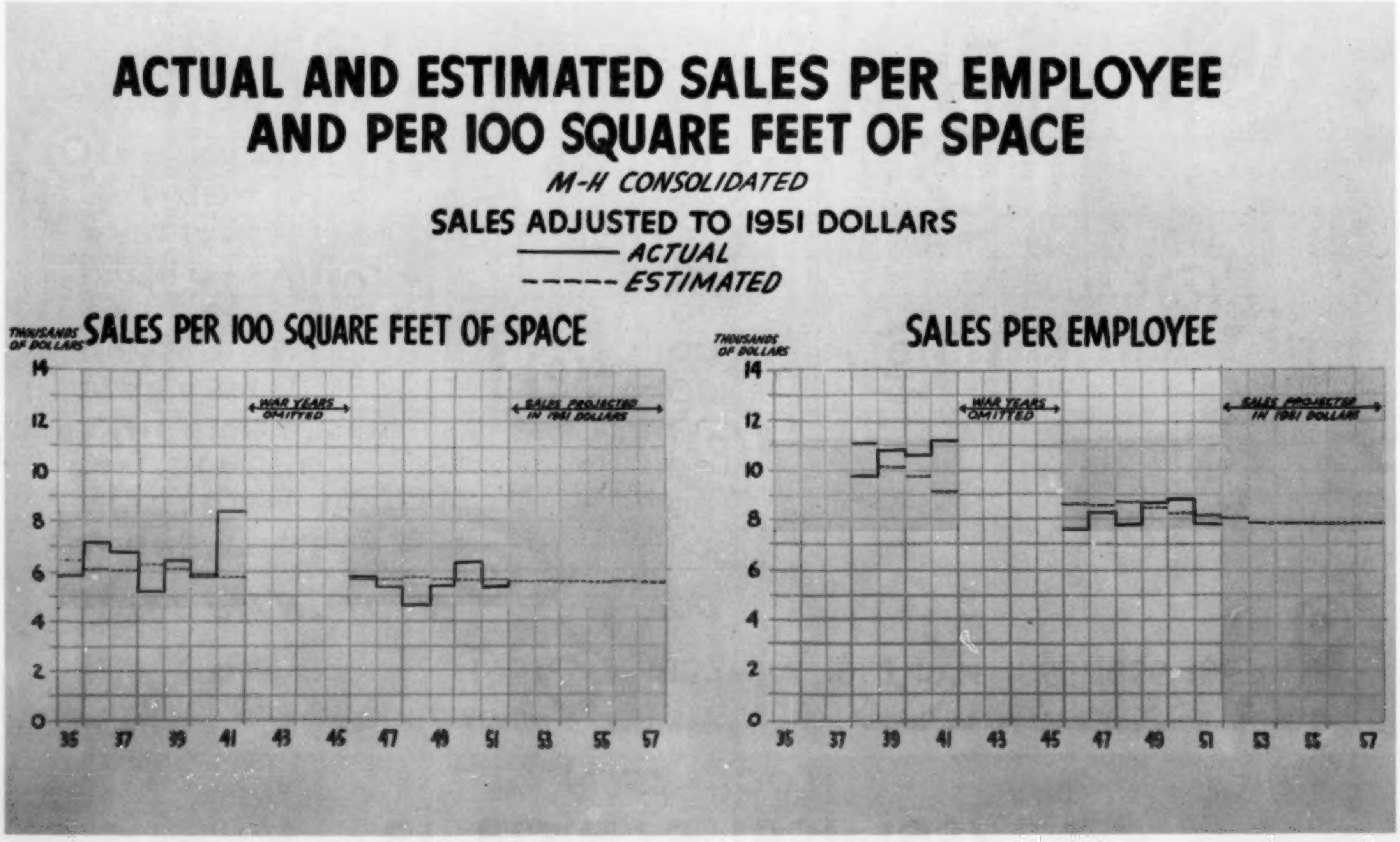
ACTUAL AND ESTIMATED SALES PER EMPLOYEE
AND PER 100 SQUARE FEET OF SPACE
M-H CONSOLIDATED
SALES ADJUSTED TO 1951 DOLLARS
ACTUAL
ESTIMATED
SALES PER 100 SQUARE FEET OF SPACE
THOUSANDS OF DOLLARS
WAR YEARS OMITTED
SALES PROJECTED IN 1951 DOLLARS
SALES PER EMPLOYEE
THOUSANDS OF DOLLARS
WAR YEARS OMITTED
SALES PROJECTED IN 1951 DOLLARS

Chart No. 7

ACTUAL AND ESTIMATED INDEX OF M-H PLANT LOAD BY PLANTS 1951-1957

(1952 = 100)

	ACTUAL		PRELIMINARY ACTUAL		ESTIMATED**				
	1951		1952		1953	1954	1955	1956	1957
TOTAL PLANT LOAD			*100*						
MINNEAPOLIS			100						
MPLS (except AERO)			100						
MPLS (AERO)			100						
CHICAGO			100						
WABASH			100						
BROWN			100						
VALVE			100						
MICRO-SWITCH			100						
APPLIANCE			100						
CANADA			100						
MARINE*			—						

* STARTS 1953

** BASED ON SALES ESTIMATES BY LONG RANGE PLANNING COMMITTEE (1/6/53)

The study of past and prospective relationships between facility and personnel requirements and consolidated net sales, is illustrated in Charts No. 3 through No. 6, inclusive. The study of the relationship of various physical and capital requirements to consolidated sales in the past covers the period 1935 through 1951, with the exception of the war years, 1942 through 1945. Projected relationships, based on sales estimated in 1951 dollars, are shown on the original charts for the years 1952 through 1957. These projected relationships, like the sales data in Charts No. 1 and 2, have been concealed in the illustrations to avoid disclosure of confidential information.

Charts Nos. 3 and 4 pertain to the relationship of capital requirements to consolidated sales, with the various capital requirements expressed in such tterms as total assets, fixed assets, investment in buildings machinery and tools, current assets, net working capital and inventory. Chart 3 shows the original data on each category of capital required and on consolidated sales; Chart 4 shows the relationship of capital required to sales by expressing each type of capital as a percentage of sales for the corresponding year.

Charts Nos. 5 and 6 relate to the relationship of space and labor requirements to consolidated sales. Again the original data on sales, number of employees, and square feet of space are shown in the first chart (Chart No. 5) and relationship of space and employee requirements to sales in the second chart (Chart No. 6).

Through the study of past relationships to sales of both the capital requirements shown in Charts Nos. 3 and 4 and the physical requirements shown in Charts Nos. 5 and 6, it is possible to develop some insight into both average relationships between requirements and sales and the degree of variation of each relationship about its average. On the basis of these past relationships, and the long range sales forecasts, it is then possible to develop estimates of the projected relationships for the years 1952 through 1957. These estimates are the projected data covered up in the illustrations shown in Charts Nos. 4 and 6.

In the development of projected relationships, it is necessary, however, to take account of changing trends and developments in each major phase of the company's operations. Plans and programs must be developed, for example, for various problems in such areas as sales, manufacturing, engineering, personnel and finance. All of these specific plans or programs must then be reconciled or integrated into an over-all long range plan for future operations. Some of the questions and problems which must be dealt with in developing such a long range master plan are indicated in outline form below (Exhibit No. 1). This outline is not intended to be complete and exhaustive, but rather merely indicative of the types of thinking required for the development of realistic programs for future growth and expansion. Through the perspective gained in thinking through and planning such programs, it becomes increasingly possible to carry out future programs with the orderliness and timeliness required by the size and complexity of the management job.

Exhibit No. 1

Outline of Illustrative Planning Questions – Sales, Manufacturing, Plant, Personnel, and Finance

SALES

1. Estimating Sales

A. Estimate sales volumes for each division for each year for five years in advance. Among other things, this will require:

(1) Long range economic forecasts
(2) Assumptions as to dollar values
(3) Knowledge of impact and estimates of future importance of the national defense program

2. Setting Sales Objectives

A. Sales estimates and sales objectives need not be the same. Sales objectives will result from the modifications to otherwise normal sales growth caused by such things as:

(1) Changes in competitive tactics
(2) Availability of engineering
(3) Availability of capital
(4) Availability of personnel
(5) Maximum profits as opposed to maximum volume

3. Studying Markets

A. Analyze markets now served and additional markets which we plan to serve by present divisions to determine:

(1) Present penetration as compared to competition
(2) Possibilities for expansion of sales by means of:

(a) Improved and additional manpower
(b) Improved and additional advertising
(c) Improved and additional sales promotion
(d) Improved and additional products
(e) Change in policy
(f) Change in price and discount structure

B. Investigate new markets and new products not contemplated in present plans for the normal expansion of present divisions.

4. Studying Products from the Sales Point-of-View

A. Analyze present product lines by classifications to determine:

(1) Profitable and unprofitable lines
(2) Which lines will increase in volume
(3) Which lines will decrease in volume

5. Estimating Manpower Requirements

A. Analyze present sales manpower in each di-

vision to determine:

(1) Quality
(2) Additional manpower required for 1953
(3) Future manpower requirements by types of manpower needed to meet normal expansion plans through 1957
(4) Requirements for sales management

B. Determine additional sales manpower requirements to promote and sell new products and new markets not contemplated in present plans for the normal expansion of present divisions.

C. Analyze present training facilities for sales and sales management personnel and estimate future requirements for an adequate training program during the next five years.

6. Developing Inventory Requirements and Control

A. What are the present inventory requirements in the factory and in the branches?

B. What will be the future inventory requirements to meet the expanded sales program during the next five years?

C. Establish inventory control system which satisfies sales requirements but minimizes capital investment.

MANUFACTURING

1. Production: What plants will produce, what sales volume of what product division, taking into account:

A. Seasonal Fluctuations

B. Directions of future developments of products, their markets and costs

C. Inherent local skills

2. Plant: How large a plant will be needed in each of above at start and in foreseeable future?

A. Optimum ultimate size
B. What type of building will be required?
C. What kind of products will be manufactured?
D. What is the level of burden in engineering, administration and sales?

An illustration of planned plant load, including one plant to come into operation in 1953, is shown in Chart No. 7.

Chart No. 7

3. Tools: How many machine tools will be needed for general purpose and specialized equipment?

4. Organization: What is general organizational structure and optimum manpower size?

5. Plant Location: Where should the additional plants be located:

A. Is it advisable to disperse the plants for reasons of markets, labor skills, supply and union?
B. Is labor force available?
C. What are the transportation facilities for shipments and passengers?
D. Are raw materials semi-finished, etc., available and what may be expected on deliveries?
E. What type of taxes are involved and effect

(1) State corporate?
(2) Personal property corporate?
(3) State personal?

ENGINEERING

1. Product Lines: What are the product lines which are going to account for future expansion?

A. Current lines
B. Diversified lines

2. Acquisition of New Lines: How are we going to acquire these lines?

A. By own engineering
B. Buy out companies
C. Ratio of combination of above

3. Engineering Content: What is the engineering content of these new product lines?

A. Heavy, such as in ____________________
B. More nearly like in ____________________

4. Location: Where will operations be located?

A. Expansion in ____________________
B. Expansion elsewhere with engineering along with each product group
C. Central research and development in ________ with production engineering only to be located with product groups

5. Personnel and Facilities: What will be the requirements for engineering?

A. Number of engineers and related personnel
B. Equipment in terms of test fixtures, benches, desks, etc.
C. Space

PERSONNEL

1. Size and Rate of Growth of Employee Group

A. Production and maintenance: unskilled, semiskilled, craft, specialized
B. Office: clerical, specialized
C. Professional: engineering, research, accounting, law
D. Sales: inside, field
E. Supervisory: factory, office, engineering, sales
F. Executive

2. Manpower Supply

A. Depth of labor market area
B. Quality of labor market area
C. Attracting and holding employees

(1) Accessibility, housing, transportation, schools
(2) Social and cultural activities
(3) Facilities for recreation, advanced education

3. Organization Development

A. Optimum size of unit
B. Relationships with other company locations
C. Method of meeting turnover, growth
D. Training needs – factory, office, engineering, sales, executive

4. Personnel Policies

A. State and local labor laws
B. Wage and salary levels
C. Local employment practices
D. Local vs. company-wide practices
E. Inter-location transfers
F. Labor unions – activity, jurisdiction, interrelation of contracts
G. State and local tax problems – payroll, income, welfare

FINANCE

1. Working Capital: Requirements will be dependent upon:

A. Tooling and make-ready costs
B. Length of time between making expenditures for tooling and make-ready and resulting sales
C. Margin of profit
D. Sales volume
E. Do administrative functions fit into present organization or is new staff required?

2. Capital Acquisition: If sizeable investment (working or fixed) required, how will it be financed?

A. Common stock. If so, will per share earnings be diluted or increased?
B. Preference stock. Will per share available to common be diluted or increased?
C. Bonds. Same consideration.

(As for A, B or C, total capital structure must be studied to see it is in proper balance as between equity capital and other sources of capital.)

3. Changing Ratio: Relationship of fixed and variable costs as result of expansion.

Summary

By way of a summary, in a truly modern and progressive company the very nature and essence of the management function is long range planning. Within such an organization, daily operations and decisions are made with a view toward their contribution to the future of a company. The long range planning function implies:

1. A realistic future sales objective

2. An appraisal and evaluation of the degree to which various elements of the business contribute to accomplishment of that sales objective.

3. An appraisal and evaluation of the requirements on sales, engineering, production and finance attendant to the accomplishment of the sales objective.

4. The formulation of detailed programs for sales, engineering, production, and finance designed to achieve the sales objective.

5. A formal and regular review and reappraisal of the future sales objective in terms of the degree to which current operations and current business conditions justify the sales objective laid down previously, or require its modification.

At any stage of a company's development, there is probably no one thing which is more needed by top management than a formal long range planning program. In order to continue the growth of the enterprise effectively and profitably, planned activity is absolutely mandatory. You must constantly have before you, in black and white, where you are going, how much the various divisions and their various products and service lines will contribute to your getting there, a basis for determining what additional possibilities are open to you, and what further measures must be taken in order to realize these possibilities.

LONG RANGE PLANNING AND FORECASTING IN THE EXTRACTIVE INDUSTRIES

Technical Notes, Vol. 1, No. 4, March 1953

A. H. Weiss, Editor*

EDITORIAL COMMENTS

This entire issue is devoted to the theme "Long Range Planning and Forecasting in the Extractive Industries." Three segments of the extractive industry are represented in the four articles which follow; namely, oils, minerals, and non-ferrous metals. These companies represent a fair cross-section of the extractive industry. We should also like to recall to the reader's attention the very excellent article on the closely related subject of capital expenditures budgeting by Mr. H. G. Hill, Jr. of the Atlantic Refining Company which appeared in the February issue of Technical Notes.**

While this series of articles cites the forecasting practices of companies engaged in the extractive industries, the techniques outlined should be of interest to budget men in virtually every field of business. The importance of this type of careful foresight is certainly not restricted to the extractive industries alone.

Perhaps the most startling observation that can be made after reading the articles which follow is the fact that there is such wide divergence in the scope of the forecasting practices of each company. Some make an exhaustive study of potential markets and other factors which may affect the future operations of the business, while others have found it desirable to make forecasts relatively simple in scope. All agree that long-range forecasting provides their organization with a planned program of stated objectives on goals.

NEW YORK CHAPTER

LONG RANGE METAL PRICE FORECAST PROCEDURE

By Mr. H. G. Stringham,
Assistant to the Comptroller

AMERICAN SMELTING AND REFINING COMPANY

Because of the volatile nature of non-ferrous metal prices and the resulting impact of these prices on the business of this Company, a long range forecast procedure has been established to gather information pertinent to metal prices and thereby provide a basis for forecasts of prices as they affect long range planning for mine development, plant construction, metal sales policy and ore and scrap buying policy. This write-up briefly outlines the procedures followed.

The American Smelting and Refining Company is the world's largest smelter and refiner of non-ferrous metals with plants in the United States, Mexico, Australia and England. In addition to custom tonnage treated by the plants, mining and milling operations located in the United States, Mexico, Canada, Peru, Nicaragua, Australia and Saudi Arabia supply an increasing part of the ores and concentrates handled.

Lead, zinc, copper, gold and silver are the principal refined metals produced, but in addition by-products, such as bismuth, cadmium, antimony, arsenic, sulfuric acid, selenium, tellurium, indium, platinum, palladium, etc. are also resultant products of the operation.

The Company's Secondary metals division with plants in the United States and Canada produces an extensive number of aluminum, brass, copper, lead, magnesium and zinc alloys, solders, babbits, anodes and fabricated lead products.

Forecasts for copper, lead and zinc prices are prepared at least annually for use by the Metal Price Committee in establishing the official 5-year forecast prices to be used for planning purposes.

The direct and quick reaction of metal prices to factors of supply and demand, dictates that the forecast be based on such factors. Before attempting to estimate the potential supply and demand, it is first necessary to consider items such as the following and make assumptions as to their most probable action over the ensuing 5-year period:

1. International Relations - particularly war or prospects of war.

2. World Trade - strikes, political upheavals, transportation difficulties.

3. U. S. Industrial Activity - measured by Federal Reserve Board Index of Industrial Production. The reason for use of this index will be indicated in the comments following which concern demand factors.

4. Foreign Industrial Activity - including results of U. S. aid.

5. Tariffs.

6. Value of Dollar.

7. Gold and Silver prices - U. S. Prices being Government fixed, by-product credits resulting from gold and silver contained in the copper or lead, and consequently the cost of the copper or

*Mr. Weiss, Editor of Technical Notes, is budget director of the Harnischfeger Corporation, Milwaukee, Wis.
**Ed. note—This article is reproduced in the annals as the second following section, immediately after "Capital Budgeting" by Joel Dean.

lead is affected by any governmental action on prices.

8. Government stockpile or subsidy policy.

9. Nationalistic tendencies in foreign countries - government controlled economies tend to keep in production even uneconomic mines.

10. Substitution.

The forecast follows the procedure of estimating world demand for a metal and then determining the approximate price required to cover the production cost of that much metal. Various statistical series are available to indicate U. S. consumption. A close correlation has been found to exist between consumption and the Federal Reserve Board Index of Industrial Production. Therefore, by projecting the estimated level of this index, as commented upon above concerning assumptions to be considered, the approximate demand is indicated five years hence. This forecast is checked by estimating consumption by major users.

Foreign demand is estimated primarily on the basis of forecasts by the Company's Sales Department.

Supply data is based on a tabulation of the normal productive capacity of each of the world's major mines, both current and estimated five years into the future. An indication of each mine's break-even point (cost per pound of metal) is also computed. These obviously very general figures are compiled primarily from published financial reports of the companies involved.

The productive capacity is recapitulated to show the metal available to each 2¢ increment of production cost. By comparing the estimated demand with this recapitulation and assuming such demand will be met by the lowest cost producers, the cost of the highest increment necessary to meet the demand is found. The cost of this highest increment gives a general indication of an approximate price range which might be expected and certainly one below which the price cannot be expected to fall below for any extended period.

This indicated price is checked against projections of the B.L.S. Index of wholesale commodity prices. While metal prices have been more volatile than the Index, a certain degree of correlation has been found to exist.

In conclusion, it should be stated that the many deficiencies in basic data available and technique used quite obviously make the results far from precise. However, the continuous tabulation of data and refinement in procedure do provide a rather sound base from which the Metal Price Committee can arrive at reasonably accurate conclusions, certainly far better than without such information.

* * * * * * * * * * *

LONG RANGE PLANNING AND FORECASTING

By G. R. Westby, Assistant to Treasurer

CERRO DE PASCO CORPORATION

The Cerro de Pasco Corporation has been a member of the non-ferrous metals industry for fifty years. It is chartered under the laws of the State of New York and is managed by American interests. Up to the present time all of its properties are located in the Republic of Peru, high in the Andes Mountains.

The Corporation presently operates five deep shaft mines, four of which are primarily copper-lead-zinc producers. The fifth supplies coal needs. Refined metals are produced from the Corporation's ore bodies as well as from the ores and concentrates purchased from independent mines. With the exception of small quantities of bismuth-based, low melting point alloys, Cerro de Pasco does not engage in the manufacture of finished or semi-finished metal products.

Markets and Products

Markets for Cerro's products are international in scope with only relatively minor quantities sold in Peru. The products available for sales are:

Zinc
Lead
Copper
Silver
Gold
Bismuth
Antimony, Selerium, Cadmium, etc.
Copper, Sulphate and Zinc Sulphate
Sulphuric Acid

Industrial Processes

The industrial processes in which the Corporation engages are those common to the non-ferrous metals industry. A general statement of the activities with a brief explanation of each follows.

Exploration – Ore bodies are the sources of raw materials that eventually result in the production of refined metals. The life of an ore body is not eternal. Eventually the time comes when the ore is mined out or the remaining material does not contain sufficient metal values to justify further extraction. At this time it would seem desirable to define an ore as it is known in the mining industry. An <u>ore</u> is a material containing sufficient metal values to warrant processing to the stage of a refined metal. It is obvious that measures must be taken to maintain the feed of subsequent productive steps and what is more important is that new sources of ore must be located before the older ones are exhausted. This briefly is the function of exploration.

Mining – This step can be divided into two categories, <u>development</u> and <u>extraction</u>. Development are those measures taken by specialized mine crews to direct the activities of the extractors. They locate the vein, determine its direction and prepare the working area. It is important that ore and not worthless rock be transported horizontally to the

shaft and vertically up the shaft if hauling costs are to be kept at a minimum. Extraction are those activities relating to the physical removal of ore from nature's resting place to the next stage of the productive cycle.

Concentrating – With the exception of some ores which are simple in geologic composition and extremely high in metal values, most of the products of the mines go to a concentrator which is a mill designed to remove worthless material and to produce a concentrate of high metallic content. In the case of a complex ore, copper, lead and zinc concentrates are produced by selective flotation.

Smelting – Direct smelting ores and concentrates are smelted in which process many of the impurities are drawn off as a slag. The molten metal of approximately 85% purity is cast in thick plates called anodes.

Refining – The anodes are suspended in an electrolyte between thin sheets of pure metal. An electric current is introduced to the anodes and taken off from the thin sheets or cathodes. During the process pure metal transfers to the cathodes and the remaining impurities drop to the bottom of the cell. These so-called impurities in the form of a slime are sent to a separate refinery for the removal of gold, silver, bismuth, etc.

Selling – With the exception of relatively insignificant quantities of metals sold locally in Peru, the Corporation has appointed the American Metal Company Ltd. as exclusive selling agency for refined metals.

Subsidiary Activities – These include the operation of a standard gauge railroad, townsites with hospitals, commissaries and other social services, and a three million acre tract of land for the raising of livestock and vegetables for the needs of sixteen thousand employees.

The Capsule presentation of the Corporation as to its products and processes having been completed, it is now time to outline long range planning and forecasting in Cerro de Pasco. This will be done on a "how" and "why" basis.

How

At the outset it must be remarked that the precision and exactness of cost behavior that most manufacturers in this country have been able to chart for their respective products as they pass from stage to stage in the industrial process is largely missing in the non-ferrous metals industry. This does not mean that we are not cost conscious, it merely acknowledges the fact that fixing standard costs in most phases of the business is impractical.

A ten year period has been determined as the optimum time interval for long range planning purposes and within this span the first five years are closely watched.

Prices and price movements are the most important factors that determine the extent of forward planning. If the reward, or the promise of it, for the effort expended is not forthcoming, a new venture should be, and is, abandoned. The time interval between the inception of the idea and getting the plant ready to produce ranges between five and seven years. It is apparent then that much importance is placed on price movements for this and subsequent periods.

Estimating prices and their movements is however but one facet of the problem. What physical quantity is going to be available at these assumed prices is another. Mining engineers by drilling and seismiographic sounding estimate the ore body into known ore and probable ore. The known ore divided by the extractice capacity of the equipment to be used will give some idea as to the life of the mine. Later, but not before the known ore becomes used up, the exploration crews must give some idea of the extent of ore in the classification formerly known as probable. The redesignation will determine the extension of the life of the mine beyond that indicated by the originally known ore reserve.

So far all that has been accomplished is the determination of what the physical output of the Corporation will be for the future period under assumed optimum conditions. Consideration must now be given to:

Costs
Profits
Encroachment on profits..

Direct costs of each productive process are taken at the average of the available six months prior to the time the long range forecast is made. This time period has been used because in the first place it is long enough to level out any accounting adjustments that might possibly distort a shorter period. It is also short enough so as not to minimize the effect of rising costs if that be the case.

Indirect operating expense is regarded as a fixed expense and not as a function of volume. It is estimated on an annual basis and included as such for each year of the forecast.

It is obvious that the person responsible for the forecast has limited technical knowledge and in order to establish a plan that has credence, the best information must be obtained. Key personnel for this purpose are:

Vice President and Manager of Operations
Plant Superintendents
Resident Mining Engineer
Resident Metallurgist

It is at this point that a ten year forecast is made. It must be remembered that this is based on Corporation factors only, i.e., supply and cost, company-wise.

If there were no external factors this would be as far as one would have to go with respect to profit and loss planning. Unfortunately there are external factors that are both difficult to time and equally difficult to ascertain as far as magnitude is concerned.

Business cycles are reviewed because we are all interested in "riding the peaks and missing the valleys."

Labor relations with respect to the Corporation and its big customers such as the storage battery makers, the brass mills, the galvanizers, etc. are given consideration.

An evaluation of the political scene in Peru and the United States must be made. The republic of Peru has a liberal mining code. Will it be sustained?

Tariff barriers exist in the United States with respect to lead and zinc. Will the rates be increased on Cerro de Pasco metal?

Finally there is the aura of complexity that surrounds non-ferrous metals through international trade. Standard grades have been prescribed for each metal and within each grade there is practically no difference in the product of each producer. London has recently returned to pre-eminence as a trading center for lead and zinc necessitating revisions in the price schedules for these metals.

The impact of the external factors mentioned in the preceding paragraphs must be given effect on the Corporation's long term forecast by superimposing them over the Corporate plan and adjusting where necessary and feasible.

When to Adjust

So far attention has been directed to the broad mechanics of long range forecasting. The question that naturally arises at this time is when does one adjust the plan for changed conditions? An inherent danger must be recognized and that is the striving for perfection and preciseness at the cost of losing sight of the purpose. In the first place, the projection is the result of the best estimates of the best qualified people plus the results of past short-term history plus innumerable intangibles. It is evident that the outcome has got to be at a variance with actual results. The redeeming feature is that the elements of the plan are known so that the causes of deviation may be readily determined for future reference. When the forecast has lost its effectiveness as a result of a number of changes in basic conditions it must be altered. This is an altogether different thing from continuously changing the plan for the purpose of change alone. In the non-ferrous metals industry nicety of composition and presentations runs a poor second to establishing a basis upon which future financial decisions must rest.

Why

Why is long range forecast necessary? The answer can only be predicated by a review of the financial responsibilities of the Corporation. Following a pattern common in most companies, the Corporation is actively engaged in expanding its productive facilities. To repeat, in the mining industry the time period between the inception of the idea and its fruition is long. It is necessary to establish, at least on an estimated basis, the desirability of the project upon completion as it seems today.

Closely allied to capital requirements is the availability of cash to pay for the new assets. If the wherewithal is apparently not going to be generated out of current operations, some advantage can be gained from the fact that management will have sufficient time to approach the bankers to secure additional funds at the best terms available.

When undergoing a capital expansion program, sight is sometimes lost of the current working capital requirements. The forecast will give some idea of the conditions to be overcome so that plans can be made for securing adequate working capital for the period under consideration.

The nightmare of inventories and their adjustments are well known. The future plan with its highlighted critical points can do much to bring about an orderly approach to the inventory problem.

In the mining industry, as in many others, good financial management is reflected in the integrity of the firm's securities. This is particularly important in the attraction of new venture capital and in the case of property acquisitions when the consideration is the exchange of securities.

The last "why" that will be considered is one which does not merit consideration by itself, but rather in conjunction with one or more of those previously mentioned. It is the requirement issued by bankers, either of a private or public character upon the issuance of a line of credit.

In the final analysis, be the case that of Cerro de Pasco, its associates in the non-ferrous metals industry, its counterparts in other associated or unassociated businesses, the long range forecast represents a present evaluation of future prospects. Its physical aspect is a sheet or innumerable sheets of paper and of itself means absolutely nothing. It is at best a tool of and not a substitute for alert, skilled and interpretative management.

* * * * * * * * * *

LONG RANGE PLANNING AND FORECASTING

By Mr. P. A. Lawrence, Manager of Control

FREEPORT SULPHUR COMPANY

Freeport Sulphur is a producer of crude sulphur, or brimstone. Sulphur mining operations utilizing the Frasch process are conducted at several plants located in the Gulf Coast area of Texas and Louisiana. In addition, the company has other, smaller mineral interests including oil, nickel, potash and pyrites. Dollar sales in 1952 were around $38 million: total assets amount to $53 million. The company is one of the two major domestic sulphur producers.

* * * * *

The detailed annual forecast for all phases of the company's activities is prepared each year. This forecast, representing an estimate of earnings and balance sheet items, is based upon a sales forecast submitted by the sales department, production cost

estimates prepared at the mining properties and other expenditures anticipated for the period as estimated by various personnel responsible for the different activities of the company. Supplemental budgets are developed for such activities as capital additions, research and exploration, and administrative, selling and general expense. As part of the annual projection, there is also prepared a month-to-month estimate of net earnings and of cash requirements. The basic annual forecast is subject to review and modification at the end of the first six months period. Cash projections are exposed to current review.

The annual forecast is not approved in total although certain of the supplemental budgets are specifically approved and become the basis of the year's authorized expenditures for these activities. Requested additions to approved budgets may be submitted for authorization as special items throughout the year. The estimate of annual production costs which is included in the annual projection is used solely for financial planning; approval of production activities is obtained through monthly budgets.

Monthly operating budgets are submitted by the properties and are based on a standard budget, which represents the anticipated normal operating and routine repair costs for the scheduled production rate, and on estimates of costs for the additional work required in excess of the standard for the month's activities. Each month's production cost budget for the mining properties is approved in advance by the management.

The month's actual costs are compared with the monthly budgets and significant variations are accounted for by the departmental superintendents. In turn, the individual property superintendents and budget departments advise management of the reason for variations and of methods suggested for reducing costs for the various programs when they are out of line with the authorizations. Top management is furnished a monthly analysis and a yearly analysis which reviews actual operations in comparison with the projections as developed in the annual forecast. The impact and effect on operations of major developments are reviewed, particularly in relation to earnings and to the outlook for earnings.

The annual forecast, the monthly budgets and the various related analyses often form the basis for – or suggest the direction of – longer range planning and forecasts. The latter activities follow a less formalized pattern.

Long-range planning is regularly engaged in for practically all of the company's activities but principally with respect to markets, earnings, capital expenditures, financial policies and research and exploration. The period covered is not fixed and may range as far ahead as 5 to 10 years.

The long-range planning process basically involves the interpretative study of (a) markets in the various consuming industries (b) the supply situation (c) productive capacity and necessary capital requirements and (d) earnings and financial policies. Major studies on the different problems are made from time to time as a basis for long-range plans; these studies and the results thereof are under constant review and revision in order to assure the updating of all such plans in line with current developments.

This company is engaged primarily in the production and distribution of one commodity, crude sulphur, and virtually the entire organization is focused toward this product. Accordingly, it has not been found necessary to establish a department for the specific purpose of long-range planning. There is one staff department devoting its full attention to long-range market studies, but the results are available for use more as applicable research than as definitive planning. In general, responsibility for long-range planning is on a vertical basis, with the various executives within the company developing programs for the individual activities for which they are responsible. Because of product concentration and the relatively small organization, long-range plans in actual practice tend to represent the joint efforts of the production, sales, financial and research groups. Services of outside consultants are utilized in specialized fields such as those relating to technical aspects of end markets and the projections of economic conditions during the period for which plans are formulated. Ultimate coordination of long-term planning activities is achieved by a top level Executive Committee.

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CAPITAL EXPENDITURES BUDGETING AND CASH FORECASTING

By Mr. E. R. Mueller, Manager
Head Office Accounting Department

SHELL OIL COMPANY

Organization

Shell Oil Company is an integrated company from exploring for new sources of crude oil to the marketing of refined products. Business is conducted by the operation of six major exploration and production areas, five refineries and 18 marketing divisions, each administered through a local office. Management responsibility and authority is on a decentralized basis and each unit is fully integrated, with final nation-wide administration and executive control retained in the Head Office in New York. On the financial side, our organization consists of a Vice President-Finance, assisted by a Controller and Treasurer and their respective staffs in the Head Office, and a Treasury Manager and staff in each of the 29 decentralized offices.

Over-All Planning

Producing, refining, transportation, marketing and administrative expenses are not budgeted in the strict sense of the word, although we do make annual estimates of these expenses. Our experience has

been that these expenses can be controlled satisfactorily and with less cost and paper work by "on-the-spot" control of operations and delegations of authority within limits at the field level. We do, however, budget certain selected items of expense such as exploration for new crude oil resources, research, advertising, memberships and donations, and these budgets are reviewed periodically as the need arises.

We depend most for over-all planning on estimates of earnings and cash position, and strict budgeting of capital expenditures. Estimates of revenues and expenses originating at the field office level are prepared in the last quarter of each year for the succeeding calendar year, and are revised quarterly.

From this information, a company-wide profit estimate is made, and by applying estimated capital expenditures, our cash position is determined. In addition to the earnings and cash position estimates for the oncoming year, earnings and cash balances are projected for two additional years based on certain internal and external factors related to the year's operations just completed. These factors include estimated variations in sales volume and prices, refining capacity, raw material production and capital expenditures.

Capital Expenditures

In the oil business, the most flexible financial aspect is found in capital expenditures. If properly controlled, capital expenditures may be quickly curtailed or even shut off, as conditions require. That is why Shell budgets this type of expenditure more formally than any other phase of its business.

Our experience with long-range budgeting of capital expenditures has not been as good as we wish it could have been because of fast changes in the oil business. We rely chiefly on a firm working budget for one year only, and project expenditures for two additional years primarily for the purpose of forecasting our cash position. Well in advance of the beginning of each calendar year the President acquaints each operating vice president with the fundamental economic and financial conditions which will govern the preparation of the capital expenditure budget for the oncoming year. The vice presidents, in turn, transmit these conditions to branch office executives who are responsible for developing budget estimates of capital requirements within the prescribed policies. After each operating vice president has reviewed with branch office executives the detailed justification of their individual budgets, a consolidation of estimates is made, and the vice presidents meet with the President and the Vice President-Finance for the purpose of analyzing the budgets in the light of availability of funds and of operating needs arising from competitive requirements, necessity for replacement or expansion.

The final evaluation of the budget is performed by the Board of Directors. The budget is then released to the operating vice presidents who, in turn, pass along to the various branch offices that part of the budget which has been allocated to them. Amendments to the budget, occasioned by changing conditions, may be made currently and follow the same channels as does the budget itself.

The budget alone, however, is not sufficient authority for operating officials to make capital commitments. Before expenditures may be made for budgeted projects, separate authorizations are required in accordance with limits of delegated authority. There are three phases to our capital budget: appropriation, commitment and expenditure. Management is informed monthly by means of regular reports from all branches as to budget amounts commited and spent so that management at all times knows how much of the budget is not yet committed and can be cancelled should it become necessary.

It is apparent from this summary that Shell has found it desirable to maintain the simplest practical control of what is ordinarily called budgeting. We believe that the money controls are best exercised not by procedures but by people.

CAPITAL EXPENDITURES AND RETURN ON INVESTMENT*

Joel Dean

Staff work in connection with the company's capital expenditure program is perhaps the budget executive's most important function. The company's profits ten years hence will depend largely on the way that the capital budget is allocated today. The judicious allocation of investment funds can do much to insure a healthy, growing, and profitable concern. The budget director is in an enviable strategic position to affect the course of the company's future development by creating and administering an economically sound system for controlling capital expenditures. He can do much for his company and for his own advancement.

Need for Improving Budgetary Controls

Capital budgeting has frequently been the neglected stepchild in the formulation of corporate policy. Production, marketing and engineering operations have received a good deal of attention from top management and great forward strides are constantly being made in these areas. No such optimistic statement would be warranted with respect to the area of capital expenditures. Even in otherwise well-managed companies, capital expenditure decisions are more frequently made on the basis of expediency or convenience than on a firm groundwork of sound economic analysis. In our studies of the capital expenditure management methods of about fifty large corporations, we found a wide variety of methods in use and a serious lack of understanding of the economic concepts underlying capital expenditure decisions.

Today's management is not satisfied with this situation. In most companies the top executives would welcome suggestions for improving the capital expenditure control methods of their companies. Here is where the budget executive comes in. He possesses the specialized technical skill which the line executive lacks. Top management has neither the time nor the specialized skills required to develop capital expenditure control procedure. Yet it recognizes that, in the exercise of judgment in making capital outlay decisions, it must have facts that are objectively determined and relevant to the problem at hand.

The budget executive is ideally equipped to provide the assistance which top management needs and knows its needs. Capital expenditure management requires a knowledge of the principles of managerial economics. It also requires a knowledge of the mathematics of finance and the techniques of budgetary control. The ability to interpret data and make forward projections is also important. Most budget men possess these skills to a large degree. Thus the budget manager is in an enviable position of being qualified to help management solve one of its most important and pressing problems.

Basic Aspects of Sound Capital Budgeting

Opportunities for profitable capital investment are not always uncovered without effort. In order to have a capital budgeting system at all, it is necessary to have a number of profitable opportunities among which to select. Discovery of these opportunities is partly a by-product of good management and partly a task which must be performed by personnel at all levels of the organization. All that follows presupposes a creative search for profitable investment opportunities. Assuming that the company does have these possibilities, we can list six basic requirements for a sound capital management program:

1. A system that will insure that investment opportunities turned up by the creative search will be objectively examined.

2. Principles for determining how good a particular capital expenditure proposal actually is.

3. A standard of a minimum acceptable degree of "goodness" and a screening procedure to apply this standard.

4. Projections of cash availability and of the demands for this cash.

5. Forms and procedures to simplify and codify the application of the over-all capital expenditure management plan.

6. A system of control to make sure that the plan will be adhered to.

The last four of these elements must be tailored individually to the company, their exact nature and form depending on the individual characteristics of each company. There are certain general principles which underlie these aspects of the over-all plan, but the points on which company differences will require variations in standards, projections, procedures and controls rule out any intensive generalized treatment. For example, the standard for accepting or rejecting investment proposals must be comparable to the measure of the goodness of in-

*Based on a paper presented to the National Conference of the National Society for Business Budgeting, Milwaukee, Wisconsin, May 14-15, 1953. Dr. Dean is head of a firm of management and economic consultants (Joel Dean Associates) and is Professor of Business Economics in the Graduate School of Business at Columbia University. Dr. Gordon Shillinglaw of Joel Dean Associates provided major assistance in preparing this paper.

vestment projects, but it also has to be tailored to each company because companies differ tremendously in their opportunities, in their cash generating ability, and in their cost of capital. Forms, procedures and controls are part of the company's over-all procedures and therefore must be related closely to the company-wide system of reporting and controlling as well as the specific principles of the capital budgeting program. It is with the second element of the capital expenditure plan outlined above, however, that we are concerned here. The principles of measuring investment worth can be generalized. Terminology and emphasis must be varied to fit in with company practice, but the underlying economic foundation is generally applicable to all business.

How Investment Worth is to be Measured

The yardstick to be applied to determine the economic desirability of undertaking proposed investment projects should permit us to rank proposals in a ladder according to relative desirability. Preferably it should also summarize all the relevant data in a single figure so as to avoid the necessity for supplementary indexes. It should also be applicable to all types of proposals.

There are three commonly used measures of economic desirability of individual investment projects:

1. **Degree of necessity** – The extent to which the project cannot be put off to later years.

2. **Payback period** – The time required to pay back the original outlay from the earnings (or savings) of the project, with no allowance for capital wastage.

3. **Rate of Return** – The rate of net earnings of the investment, after provision for getting the capital back.

Degree of Necessity

Degree of necessity has a definite role to play in most companies. Governmental authority renders some projects mandatory and these must therefore go to the head of the ladder. For other proposals the alternative may be to go out of business entirely. In either case, the alternative is so catastrophic that the project is properly labeled a "must" investment.

Projects of this type, however, are seldom as numerous as most companies believe them to be. The over-riding danger of permitting projects to carry a "must" designation is that it provides a means for justifying all sorts of projects which are undesirable for the company as a whole but which are dear to the heart of some member of the organization. Many proposals that are classified as "must" investments actually could be postponed if necessary, and many should not be undertaken at all. Examination of the alternatives to undertaking a project should reveal the source of urgency and indicate whether this is truly a "must" investment or whether it should be subjected to the same kind of analysis as the bulk of the company's investment proposals.

One major flaw in using degree of necessity to appraise investment projects is that it fails to measure the capital productivity of a proposal – that is, the effect it will have on the company's earnings. There is no functional relationship between profitability and postponability. Only by mere chance would a capital expenditure program based on urgency produce results as good as those produced by a system which is designed directly to improve or maintain the company's profit position.

The second defect of degree of necessity as an over-all yardstick of investment worth is that the degree of urgency is not objectively quantifiable. Although it might be possible to group projects into urgent and less urgent classifications, this measure is not sufficiently sensitive to indicate relatively small gradations in the degree of urgency. Therefore, it is impossible to assemble projects and line them up in any ladder of desirability. Furthermore, it is hard to imagine any standard of a minimum acceptable degree of urgency which could be used for rejecting projects which do not meet the standards.

From a practical stand point, use of degree of necessity is open to serious objection because it is likely to make the capital expenditure program merely a contest of personalities. The lion's share of the capital budget will go to those departments which have smooth and persuasive advocates. There is no incentive for any division head to engage in sound and intensive study of investment projects. If he is a smooth talker he will not need analytical support; and if he is not, his chances of getting appropriations are weak no matter how well documented his requests may be. The result is that all projects are presented in an air of emergency. Sound projects may be passed by and less desirable ones will go to the head of the list. Project urgency must be taken into consideration by seeing what the alternatives are, but it should not be allowed to run the program. Legally required investments and those for which the alternative is a catastrophe will be accepted no matter what system of capital expenditure management is employed. For others, degree of necessity falls short of the requirements for a good yardstick.

Payback Period

Payback period is a concept familiar to most budget executives. In some companies it is the sole guide to capital expenditure decisions; in others it is used as a supplementary measure. Payback period is the number of years required for the earnings on a project to pay back the original outlay with no allowance for capital wastage. It is a cash concept, designed to answer the question of how soon the cash outlay will be returned by the project's cash earnings. This payback period as an investment guide is grounded on the presumption that the advantages of quick payback are far more important than distant contributions to the company's funds. Investments which will "pay for themselves" quickly are thus advanced instead of projects which will require a longer period of capital tie-up. Thus payback period

is a means of protecting the company's liquidity and insuring that the capital fund will have a rapid turnover.

This element of conservatism is important under certain circumstances. A high outside cost of capital and small internal cash generation in comparison with the demands for funds for capital expenditure, is one combination of circumstances which might justify the use of payback period. When funds are scarce payback periods of acceptable projects will be very low. When payback period is very low, rates of return will generally be very high. If only one year payback projects are accepted, for example, it is highly unlikely that their rates of return will be low. Most projects which meet such a rigid requirement would also be justifiable on a rate of return basis.

Another circumstance which would justify the use of payback period as a yardstick of investment worth would be the prevalence of a high degree of risk attached to investment proposals. Cost saving equipment may become obsolete rapidly or new product investments may fail to find the market acceptance anticipated for them. Payback period weights the near years heavily and distant years' earnings not at all, and therefore provides some measure of protection against these risks.

Finally, payback period may be useful as a measure of investment worth for a company which is subject to extreme cyclical volatility of sales volume. The use of payback period under these circumstances will protect the firm's liquidity and strengthen it against the vicissitudes of a business recession.

Most companies, however, are in a position where they can afford to trade some liquidity for higher earnings. The problem of liquidity can never be ignored, but it can be dealt with directly by means of working capital planning and judicious combinations of internal and external financing. For these companies some of the advantages of payback period should not carry much weight. These firms, which are in the majority, have need for something more than payback. For them, the shortcomings of payback period become important.

First, because liquidity is not the most urgent problem, the tendency of payback period to focus attention primarily on liquidity is unnecessary. These companies wish to look to the future and what they wish to see in the future is a strong, healthy company with a good profit showing. Constant preoccupation with the problem of maintaining liquidity can dim this long range view.

In the second place, payback period fails to consider the earnings of a project after the initial outlay has been returned in the form of cash earnings. Earnings after the payback period has expired determine the profitability of the investment; prior to this, the company has merely gotten back the bait it cast in the water in search of higher earnings. In effect, payback period assumes that depreciation is equal to gross earnings of a project until the original outlay has been returned. Failure to consider what happens after this period is serious in that it ignores net earnings which, after all, are what the company hopes to buy with its capital funds. A two-year payback project with earnings that will last for three years is a far poorer investment opportunity than a three-year payback project with earnings that will last twenty years.

In short, payback period is neither inclusive enough nor sensitive enough to allow for all the dimensions of profitability which are relevant to capital expenditure decisions. Where liquidity is the over-riding goal of company policy or where a high degree of cyclical or technological risk is present, payback period may be highly useful. However, under most circumstances it is inadequate as a guide for the appraisal of all the profit-producing investments of the firm.

Rate of Return

The rate of return on an investment proposal refers to some relationship of the project's net earnings after allowing for capital wastage to the amount of invested capital tied up. This is the only one of the three measures which is computed using net earnings. Payback period is measured in terms of gross earnings, while degree of necessity has no functional relationship to earnings at all.

Management generally thinks in terms of a net earnings figure; in fact, management's primary job is to produce net earnings. Why, then, have rate of return criteria of investment worth not been used more frequently? One reason is the heritage of the past. When business was less complex and investment opportunities did not have to be sought, simpler measures were adequate. Furthermore, companies subject to one-man rule seldom needed strong capital budgeting methods because the capital budget was the province and the product of the big man's judgment. Therefore, the use of rate of return in the capital management scheme is likely to be an unfamiliar one even though it has long been recognized as the primary measure of company-wide profit achievement. Because of this, any rate of return measure takes time to sell and time to explain.

More serious than this is that the complexity of a rate of return measure requires that a good deal of care and effort be taken in installing such a system. Payback period is not subject to this limitation. It is simple to compute and easy to explain. These defects cannot be denied, but they should not be allowed to interfere with the adoption of a rate of return measure if it proves superior in other ways. Unfamiliarity and ignorance must be corrected, but they need be corrected only once. After the system has been installed and personnel trained in the method, little educational effort is needed to keep it going.

Rate of return as a measure of investment worth does have many superiorities. In the first place, rate of return, because it is measured in terms of net earnings and capital productivity, considers the full lifetime characteristics of any investment pro-

posal. Capital wastage – that is, the gradual loss of the economic value of the facility over time – has an important effect on the computation of net earnings. To determine the length of time over which the project will produce earnings is therefore an important determinant of economic worth of the project. Although estimates of the distant future are bound to be inexact, they must be made in order to include all the relevant data. Neither payback period nor degree of necessity takes any consideration of this important aspect of the goodness of an investment proposal.

In the second place, rate of return can be computed for all types of investment proposals. Because it does consider the full-life characteristics of each, it makes it possible to make objective comparisons among various competing proposals. It is therefore possible to array these requests for funds in a ladder of economic desirability and select only those which appear to be the best. Furthermore, this makes possible the comparison of projects through time; a request which is submitted today can be compared with one submitted two months ago or one that will be submitted some time in the future.

Third, it is possible to establish objectively determined cut-off standards when projects are evaluated in terms of rate of return. The cost of capital of a particular company can be estimated by objective means. This cost of capital is stated in terms of a rate of return and indicates the earnings yield demanded by the market place for each particular company. Thus investment worth computed as a rate of return is directly comparable to a cut-off rate based on cost of capital. This not only tends to place the appraisal of investment projects on an objective and impersonal basis, it also tends to free top executives' time by permitting the use of standards of minimum acceptable rate of return which can be filtered down through the organization and used to kill off at lower levels projects which would have to be thrown out eventually at the top.

Finally, rate of return is the most directly relevant index of the economic desirability of an investment proposal in that maximization of profit is the primary function of management. The failure of degree of necessity and payback to consider capital wastage is not likely to lead to this result. Neither of them is keyed to net earnings and thus they are not necessarily directed toward profit maximization.

Data Required for Capital Productivity Measurement

Selection of rate of return as the most relevant measure of investment worth is merely the first step. Two problems remain: (1) the selection of the concept on which data are to be gathered and analyzed; and (2) methods of combining these data into a rate of return. The correct solution to the first of these problems – how to measure earnings and investment – is of primary importance. No matter what method is used for computing rate of return, if the data are improperly stated and interpreted, the resulting rate of return figure will be little more meaningful than payback period.

The problem of insuring that the data used for calculating rate of return are the most relevant to the investment decision will be simplified if two fundamental principles are understood: (1) capital productivity is determined by the added earnings produced by the added capital investment required by the project; and (2) the source of the project's earnings can be found at looking at the alternatives to making the capital outlay. The investment outlay should be calculated as that which is required to undertake the project instead of rejecting it and taking an alternative course requiring less investment. Armed with these two general principles, the development of specific instructions for a particular company is a relatively straightforward task.

A few examples will serve to show how these principles can be applied. Many investment projects require the expenditure of funds on items which can be treated as current expenses and written off for tax purposes. A building may require rehabilitation before new machinery can be installed and the rehabilitation expense is generally a deductible item. Applying our principles, we should first ask ourselves whether or not this expense would be necessary if an alternative were adopted. If we do not install the new machine will the building have to be repaired anyway? If the expense is really attributable to the project at hand, then it should be included in the investment outlay, less any tax benefit which results. If, on the other hand, the repairs would have to be made whether or not the project is accepted then they are not truly part of the outlay required to put this project in operation and should not be used in the rate of return base.

Research and promotional expenses connected with definite proposals should be treated just as if they were made for plant and equipment (always of course allowing for any tax benefit due to treating these as current expenses). However, only planned future outlays in these categories are relevant to the investment decision; past outlays are sunk investments and thus water over the dam and should not be permitted to influence the current decision.

Similarly, the earnings of a project should be computed by comparing costs and revenues which would exist after the adoption of the project with costs and revenues if the proposal were rejected. If installation of a new burglar alarm system in a warehouse, for example, will permit the company to dispense with the services of a watchman, then these are the added revenues from the project. Added costs would depend on the cost of maintaining the new burglar alarm system and of feeding electric current through it. Capital wastage cost might also be allowed for in determining the possibility of the project. Overhead expenses which will be the same in total whether the proposal is accepted or rejected should not be charged to the project as costs, at least in the computation of an anticipated rate of return. This is not to say that these overhead costs will not be allocated to the facilities after they have been installed – that is a matter of accounting policy – but for decision-making purposes, this allocation is

irrelevant. Any variable overhead costs which will be increased because of this project should, of course, be included.

How to Calculate Rate of Return

Once these principles have been understood and accepted, the most important part of the problem of measuring investment worth will have been solved. However, it would be interesting to consider briefly the alternative ways of combining these data into meaningful rate of return figures. Essentially there are two methods which might be used. The first of these – which we call the "Accounting Method" because it is closely related to many of the concepts in conventional accounting procedure – takes a ratio of the project's earnings averaged over the life of the proposition to some measure of investment, either original outlay or average book investment over the project's lifetime. The second – referred to here as the "Discounted Cash Flow Method" – computes rate of return as the maximum interest rate which could be paid on the capital tied up over the life of the investment without dipping into earnings produced elsewhere in the company.

One of the shortcomings of the Accounting Method is that it is difficult to decide what investment base to use. An equally good case could be made for using the entire original outlay adjusted for tax benefits as could be made for using some concept of average investment. Neither of these is adequately representative of lifetime capital tie-up, although some measure of average investment is probably a better indication of this than the original outlay. This shortcoming can be eliminated by standardizing company procedure; although the choice would be subject to some objections, at least the practice would be standardized.

More serious is the fact that the Accounting Method is insensitive to variations in the time pattern of investment outlays and earnings. The process of averaging lifetime earnings ignores any earnings trends and these may be quite important. Near earnings are generally to be preferred to distant earnings because they can be reinvested more quickly or made available for dividend payments or liquidity cushions in the near years. For companies whose investment projects are all roughly similar in time shape and in length of economic life, the added accuracy of the Discounted Cash Flow Method probably does not justify the transitional pain and effort required to install the system, but the insensitivity of the Accounting Method in this respect will be extremely important to any company which has a number of projects which vary either in time shape or length of economic life.

Probably the greatest superiority of the Accounting Method is that it is familiar. Everyone knows how to compute a ratio by dividing one number into another. The Discounted Cash Flow Method does not have this advantage; it must be explained to the people who will apply it.

The way in which the rate of return is computed under the Discounted Cash Flow Method looks complex at first sight. Cash payments and cash receipts are arranged in a time table extending over the life of the project. A table of discount factors is then used to find the interest rate that discounts the future earnings of the project down to a present value equal to the project cost. This interest rate is the rate of return on that investment, and indicates the highest interest rate that could be paid on borrowed money and still break even over the lifetime of the project. The accompanying exhibit illustrates the application of this method. First, discount factors for 18% interest rate are applied to the annual earnings. It is found that 18% is not a high enough interest rate to discount all these future earnings down to the project cost of $1,100. A rate of 22%, on the other hand, is too high because it discounts future earnings too rapidly. In this case 20% turns out to be the correct rate.

EXHIBIT 1

DISCOUNTED CASH FLOW METHOD ILLUSTRATED

Price of Machine:	$1,100
Life of Machine:	5 years
Salvage Value:	None

Year	Gross Earnings Before Depreciation	Present Value of Earnings Discounted At 18%	20%	22%
1	$ 100	$ 92	$ 91	$ 90
2	300	229	223	216
3	400	255	243	231
4	600	320	298	278
5	600	267	244	224
Totals	$2,000	$1,163	$1,099	$1,039

Note: Discount factors taken from interest tables based on continuous compounding.

This illustration indicates the basic simplicity of the Discounted Cash Flow Method. Earnings are stated as cash receipts gross of depreciation. Therefore, it is not necessary to make an explicit allocation of depreciation charges year by year. Depreciation is allowed for automatically because the interest rate that discounts the sum of present value to zero is the rate of return on the investment after annual provisions for repaying the original outlay. We are not, as in the Accounting Method, watching the write-off of original cost; instead we are looking at the growth of our investment outlay as we compound it through time. A further element of simplicity is that no decision has to be made as to what investment base should be used (e.g., original outlay,

average investment, etc.), nor is there any need to enter interest as a direct cost of the project. Once the data are gathered and set up, there is only one rate of return answer possible. Simple charts and tables can be developed to facilitate application of this method, and we have found that a half-hour's training is adequate for most people to compute the rate of return in less than five minutes.

This method is not as unfamiliar as it would seem. Although its use in measuring the work of investment projects is relatively recent, it has long been used in other areas of financial analysis. It is widely used throughout the financial community for computing insurance premiums, bond yields, and rates on leased facilities where accuracy is important and even small errors may cause serious loss. Although it is generally unfamiliar, it is actually quicker and simpler to use than the Accounting Method once the basic mechanics have been mastered.

Although unfamiliarity is probably the Discounted Cash Flow Method's major drawback, it should also be noted that it may be difficult to tie in with the regular accounting methods. Because this method does not correspond to accounting concepts as to the recording of costs and revenues, special analysis is required in computing post-mortems on past investments.

On the asset side, this method does have certain strong advantages. By confining the analysis to cash flows, the problem of how to allocate cost over time is avoided. Second, because time patterns of investment outlay and project earnings can be explicitly entered into the project's time table, this method encourages analysis and more fully thought-out projections. The Discounted Cash Flow Method also weights the time pattern of outlays and receipts in such a way as to reflect real and important differences to the company in the value of near and distant cash flows. The timing of tax savings, either from expensing part of the original outlay or from amortization of original cost, is reflected accurately and without ambiguity by this method. It is a simple matter to introduce into the time table allowances for risk which increase over time. Finally the Discounted Cash Flow Method is strictly comparable to cost of capital ratios and ratio can be used with safety in making objective capital expenditure decisions.

Conclusions

There are six primary aspects of capital management. Foremost among them is the problem of how to measure the investment worth of individual proposals. This problem has been the central concern of this paper, because it is generally more difficult to solve than the other problems of good capital management and because it is the one which is most readily generalized to all business concerns.

The other elements of the capital budgeting program should not be neglected, however. A creative search for good investment opportunities is an essential prerequisite. Short range capital budgets which show anticipated cash outlays and inflows is essential to determine internal cut-off points, and to distribute indefinite expenditures throughout the year. Realistic post-mortems are necessary for control and also to provide a body of objectively measured experience for the future. Forms, procedures and projections are also necessary.

The most important phase of measuring the economic desirability of investment projects is to collect accurate and relevant information relating to the project. The question of how these data are to be combined into a rate of return is subsidiary to the central one of what data are to be collected and interpreted. Although the Discounted Cash Flow Method is demonstrably superior to existing alternatives in accuracy, realism, relevance and sensitivity, the case for rate of return capital budgeting should not be permitted to hinge on the question of whether or not company executives are willing to go this far in changing their traditional methods. The most important point is that for most companies capital productivity should be measured by rate of return, based on relevant concepts of capital investment and project earnings. If this can be achieved, top management's task of exercising judgment in the management of the capital expenditure program will be greatly facilitated and the budget director can justifiably point with pride to his accomplishment.

THE CAPITAL EXPENDITURE BUDGET

By H. G. Hill, Jr., Budget Director
The Atlantic Refining Company

Capital expenditures frequently receive less attention than they deserve. The Treasurer or some financial officer is always critical of such outlays. Some committee or executive action is generally required before authorization is granted. But is disturbing to find what a large portion of most organizations declines to take them seriously. When the money is being spent there is nothing to worry about as it is merely a transfer of one asset to another, and profit is not affected. After the money has been spent there is no sense in worrying about the past while the present holds problems which must be decided on a current cash basis without depreciation or other book charges. Capital expenditures in many companies will amount to more than the payroll or the bill for raw materials, but the same stockholder puts up the money for them all and he expects one dollar to be as carefully spent as the other.

The Capital Expenditure Budget is one of the tools which management employs to protect the stockholder against the natural inclination of his hired servants to spend his money for him in lavish or foolish ways. The Capital Budget is far from the final answer but it should represent the consummation of the initial steps in selective control, and it should be a well defined and wisely conceived plan. The Capital Budget is only the first link in the procedure for controlling Capital Expenditures. The other necessary links are Justification, Authorization and Performance.

The Atlantic Refining Company is in an industry where capital expenditures must be large and fairly constant. For this reason the company has recognized the importance of planning and controlling these expenditures, recognizing that it has a major responsibility to the stockholders whose money is being invested in the expectation of its earning an appropriate profit. The procedure which is described below has been developed over a period of years with this purpose in view. It cannot be claimed that it is currently functioning in all the steps in all areas but it represents a control goal toward which the company is moving as rapidly as possible.

Definition

A clear and uniformly interpreted definition of Capital Expenditures is a prerequisite to a well ordered capital budget. The accounting concept of classing gross charges to plant account as capital expenditures may be too broad or too restricted to fit the particular grouping desired for budget purposes, and every party to the preparation of the budget should understand exactly what is to be included under the general head of Capital Expenditures.

Preliminary Preparation

Capital expenditure budgeting should be a subject of vital interest to all supervisors at all levels. The man who has the primary responsibility for equipment is the man who should study the economics of his replacements and be the one to recommend such expenditures when he is convinced that replacement would be profitable. At some higher level we find a man who is responsible for the most profitable conduct of some segment of the company and he plays an important part in capital budgeting. He will endorse the properly justified replacements submitted by his supervisory staff but it will be his job to develop the betterments and expansion. He will do this by long range planning in many directions, appraising the relative profitability of each considered plan. He will select the best plan for the conduct of his part in the business, noting the capital expenditure requirements of this plan which will be submitted with full justification as one of the recommended components of the capital budget. He will be well acquainted with the various items needed in the development of his project according to his selected plan; but top management will weigh it as a unit of capital expenditure to be spent on a schedule over a period of years and to earn a specified rate of return. (Exhibit "A")

Major Projects

Considering capital expenditures by major projects wherever possible will greatly increase the chance of the budget's receiving fair treatment at the top, but the delineation of such projects must be logical. Any piece of the business which might be conducted as a separate company would appear to be such a major project. The criterion might be a geographical line, an isolated plant, a special line of merchandise, or any factor which could be practically used as a basis for separation. These major groups or projects, and the treatment which they require to make them most profitable, are among the main responsibilities of management. Each one must be studied, tested, appraised, and its plan of treatment approved. The Capital Expenditure Budget focuses attention on these problems, quickly indicates where the request is merely an extension of recent experience, and permits the application of sound judgment in the distribution of funds.

Rate of Return

As capital expenditures are the investment of the stockholders' money by management in ways which will produce the maximum return with the minimum risk, and in accordance with high ethical principles, it is important to have a method of appraisal which

will be fair under all circumstances. The system which is most adaptable to all types of peculiar conditions is the one most commonly used by financial institutions and by mining appraisers. There are slightly different forms in use but the basic principles are the same, involving compounding or discounting each cash disbursement and receipt during the life of the project and determining the interest rate which will make the adjusted debits and credits exactly balance each other. This method has been on trial for many years and has stood the test. As amplification of this subject would consume the time assigned to the major topic, no more need be said at this point, but its application to the specimen project study is appended. (Exhibit B)

Consolidated Arrangement

When all projects have been screened and rated by their sponsors they are ready for assignment to their proper place of priority in the consolidated listing of proposed capital expenditures. A committee of qualified members of management from the varied major branches, takes time to review the claims of each request and arrange them in order of preference. Financial rate of return is given the greatest weight but there may be other factors which would push a project into top priority even though its rate were relatively low. In a general way the result of this committee's work will be a listing of all requested projects in the approximate order of their expected rates of return.

Desired Rate of Return

At this point the Financial Executive should contribute his opinion as to the rate of return which should be expected of capital expenditures made in the current period. He recognizes that the profit justifications of the various projects have been computed on the prices and conditions of the current economy, and he may reason that the promised return should be at least as high as the rate demanded by investors in the company's common stock. He will probably explain that growth must eventually depend upon the common stock market and that expansion cannot be permanently provided by bank loans, bond issues, or even by preferred stock. He may point to the current profit per share of common stock and to price of that share on the market. This gives a quick but accurate picture of the rate which the investing public expects from that company on its ventures. It may be a shock to some operating managers to be told that financial management and the ultimate money market are not interested in investments in investments in risk capital where the forecast return is only 4% instead of 10% or 15% which they may demand. The determination of the current minimum acceptable rate should be prepared by the Financial Executive as a corollary to the priority listing of requests.

Cash Avails

Another step, which should be taken concurrently with the priority listing and the desired rate of return, is the determination of probable cash avails. If the company does a complete budgeting operation, including a forecast balance sheet, the cash avails can be indicated from a preliminary budget study. In the absence of such help the Financial Executive will have to make his best possible guess as to the condition of the treasury at intervals through the budget period. These data must be prepared on some basis which will inspire confidence that they are realistic, and they may then be laid beside the priority listing and the profit rate gauge so that top management will be provided with the various tools needed for reaching a specific conclusion.

Birth of the Capital Budget

A top management group, in which operating and financial management meet with general executive management, considers the material submitted to it and determines the policies to be applied. If the priority listing has been properly prepared it will be possible to ascertain quickly how much of the aggregate request for funds is indicated as promising more profit than the determined minimum rate, and how much can be provided from probably available funds. If proper studies have been made of each project, before including it in the listing, it will also be possible to see the implied or real commitment for near future period. It is at this point that policy decisions must be made by top management. For instance:

A. If the project list seems unusually attractive, and offers rates of return above the minimum for expenditures in excess of available funds, the probable decision would be to proceed with these plans and procure new money.

B. If the list offers very little opportunity to invest at more than the minimum rate of return, but the forecast cash avails are ample to conduct a sizeable capital expenditure program, the decision must be made as to whether the minimum should be lowered or the expected funds employed in some improvement of the company's financial structure, such as the reduction of bonded indebtedness or the call of some preferred stock.

After all these problems have been resolved an endorsed Capital Budget is returned to the operating management, woven into the other portions of the total budget and presented to the Board of Directors for formal approval.

Authorizations

The approval of a budget does not constitute an appropriation in most industrial companies but it represents assent to a broad plan. Some form of authorization system is generally needed to control the rapidity with which the budgeted plans are being pushed, to permit management to scrutinize the individual pieces of a major project which has been granted a place in the budget, and to forestall the purchase or construction of any facilities which do not conform to current company policy. Authorization application should be accompanied by full justification, includ-

ing reference to the budgeted project in each case. They must have all specified endorsements before the actual authorizations can be issued.

Expenditure Performance

Performance against the budgeted capital expenditures should be recorded each month, if that is the convenient accounting period, in order to determine whether some projects are lagging unduly or whether there is a general condition, which is influencing the rate of expenditure. (Exhibit C) Careful study of these performance data will provide valuable information for use in preparing future budgets. Of course the performance must be reported in the same classification by major projects as was used in the adopted budget if it is to be of real value.

Profit Performance

This is the most important part of Capital Expenditure Budgeting, but it is the most neglected because it is not quickly apparent from any accounting data and may involve the development of new records or office methods. It is of relatively little value to know that the budgeted sums of money were spent about as planned, but it is of great value to know whether the claimed profit is being realized. It is not sufficient to know that the company made a total profit, although this is always gratifying. The essential question is whether the year by year investments of the stockholders' money are being wisely and profitably made.

Profit Performance reporting on Capital Expenditures requires some initial conference work and genuine cooperation between the operating and accounting departments. When the project components of the Capital Budget are first defined there must be a clear recognition of the limitations of accounting and an assurance that each project will be susceptible to identification in the cost records of future years. This may entail some modification in groups, classifications or methods, but there should be no difficulty if there is agreement on the objective.

Projects which are planned for development over a period of years will receive an almost automatic check as the request is made each year for their continuance. Others must be reviewed on a regular schedule after experience has begun to accumulate, at intervals of one, two, five or ten years. It must be remembered that capital expenditures are not made for a single year's service and the value of checking profit performance is largely lost if confined to the first year of operation.

Capital expenditures will remain on the balance sheet for a long time and they will increase book value per share, but the problem is whether they continue to produce the profit which was claimed for their span of life at the time of their authorization. A regular system of appraisal of expenditures made in past years may reveal many disappointments, but it will result in a more realistic forecast of project profits and it will point to places where some drastic action is needed. Any study of performance of Capital Expenditures will be profitable if the results are used.

	Present Value	Annual Periods					Five Year Periods				Total	Rate of Return
		52	53	54	55	56	57 to 61	62 to 66	67 to 71	72 to 76		
Plan #1												
Plant Replacements		-	-	-	-	-	-				-	
Plant Additions . . .		-	-	-	-	-	-				-	
Operating		4	4	4	3	3	6				49	
Total Expense . .	25	4	4	4	3	3	6				49	
Total Receipts . .	___	9	6	6	2	1	5				29	
Net Receipts . .	25*	5	2	2	1*	2*	1*				20*	Loss
Plan #2												
Plant Replacements		6	5	5	4	2	10	7	5	2	46	
Plant Additions . . .		-	-	-	-	-	-	-	-	-	-	
Operating		6	10	10	8	6	20	18	15	8	126	
Total Expense . .	25	12	15	15	12	8	30	25	20	10	172	
Total Receipts . .	___	9	12	15	20	15	50	35	15	5	176	
Net Receipts . .	25*	3*	3*	-	8	7	20	10	5*	5*	4	2%
Plan #3												
Plant Replacements		6	4	5	4	5	20	20	15	3	82	
Plant Additions . . .		6	6	6	5	3	10	5	-	-	41	
Operating		8	8	9	8	7	30	25	20	12	152	
Total Expense . .	25	20	18	20	17	15	60	50	35	15	275	
Total Receipts . .	___	10	20	25	30	30	120	90	50	20	395	
Net Receipts . .	25*	10*	2	5	13	15	60	40	15	5	120	20%
Plan #4												
Plant Replacements		10	8	6	5	5	20	20	15	5	94	
Plant Additions . . .		20	20	14	10	8	15	5	-	-	92	
Operating		10	12	15	15	12	45	35	25	25	219	
Total Expense . .	25	40	40	35	30	25	80	60	40	30	405	
Total Receipts . .	___	20	40	50	60	40	160	120	80	40	610	
Net Receipts . .	25*	20*	-	15	30	15	80	60	40	10	205	25%
Plan #5												
Plant Replacements		10	10	10	8	8	25	20	15	10	116	
Plant Additions . . .		30	35	30	25	7	15	10	5	-	157	
Operating		10	15	20	17	15	60	50	50	50	312	
Total Expense . .	25	50	60	60	50	30	100	80	70	60	585	
Total Receipts . .	___	20	45	60	60	50	200	160	120	80	795	
Net Receipts . .	25*	30*	15*	-	10	20	100	80	50	20	210	15%

Plan #4 shows the highest rate of return and would be recommended for place in 1952 Budget at $30,000,000. Plan also provides data for Five Year Forecast.

Exhibit A

Rate of Return of Project "A"

	Profit @ No Interest	Profit @ 25% Interest
0	-25	-25
0 to 1 year	-20	-17
1 to 2 years	-	-
2 to 3 years	15	8
3 to 4 years	30	13
4 to 5 years	15	5
5 to 10 years	80	13
10 to 15 years	60	3
15 to 20 years	40	-
20 to 25 years	10	-
Total	205	-

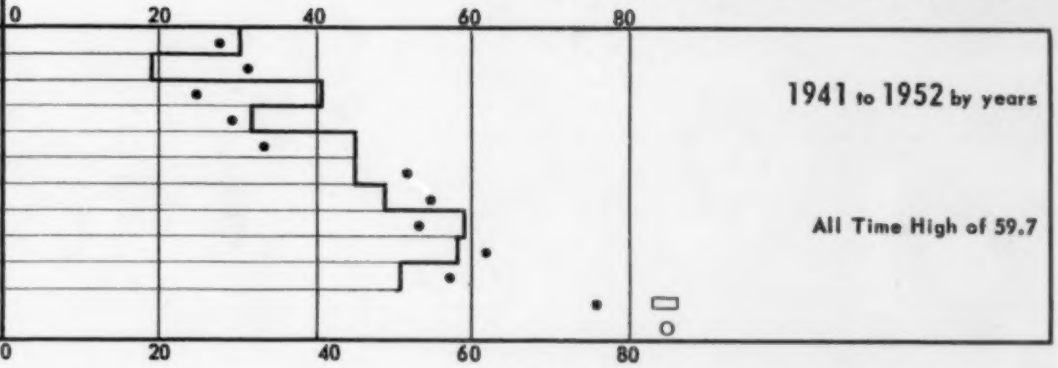
This indicates that the project could afford to pay interest as high as 25%, continuously compounded, on the total obligation originally assumed or subsequently incurred and could repay the entire amount during the life of the project. On this basis the project is classed as capable of earning a 25% rate of return.

Exhibit B

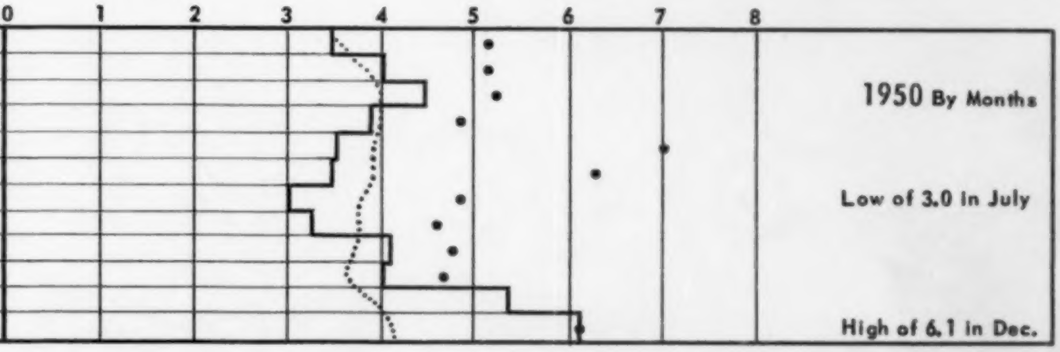
GROSS CAPITAL OUTLAY

O 1952 #1 Forecast
▭ Latest 1951 Estimate
• Approved Budgets
⌐ Actual Year or Month
..... Actual Average Year To-Date

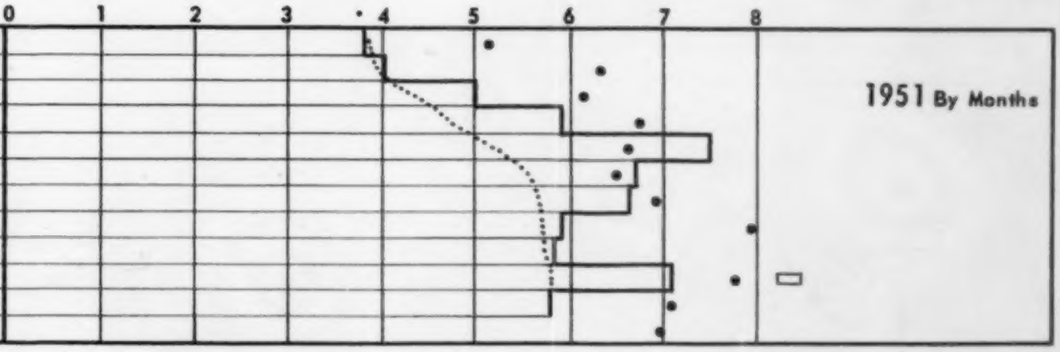
Forecast	Actual: Year or Month	Actual: Average Year To Date	Period
27.2	28.7		1941
32.6	19.1		1942
24.8	40.4		1943
30.3	32.6		1944
34.2	42.9		1945
51.2	42.9		1946
53.8	48.3		1947
53.5	59.7		1948
60.8	58.0		1949
55.9	48.8		1950
75.8			1951
83.2			1952



Forecast	Actual: Year or Month	Actual: Average Year To Date	Period
5.2	3.5	3.5	Jan
5.2	4.0	3.8	Feb
5.3	4.4	4.0	Mar
4.9	3.9	4.0	Apr
7.0	3.4	3.9	May
6.4	3.4	3.9	Jun
4.9	3.0	3.7	Jul
4.6	3.2	3.7	Aug
4.8	4.1	3.7	Sep
4.7	4.0	3.6	Oct
3.7	5.3	3.9	Nov
6.1	6.1	4.1	Dec



Forecast	Actual: Year or Month	Actual: Average Year To Date	Period
5.2	3.8	3.8	Jan
6.4	4.0	3.9	Feb
6.2	5.0	4.3	Mar
6.8	5.9	4.7	Apr
6.6	7.4	5.2	May
6.5	6.7	5.5	Jun
6.9	6.6	5.6	Jul
7.9	5.9	5.7	Aug
8.4	5.8	5.7	Sep
7.8	7.1	5.8	Oct
7.1	5.8	5.8	Nov
6.9			Dec



Forecast	Actual: Year or Month	Actual: Average Year To Date	Period
			Jan
			Feb
			Mar
			Apr
			May
			Jun
			Jul
			Aug
			Sep
			Oct
			Nov
			Dec

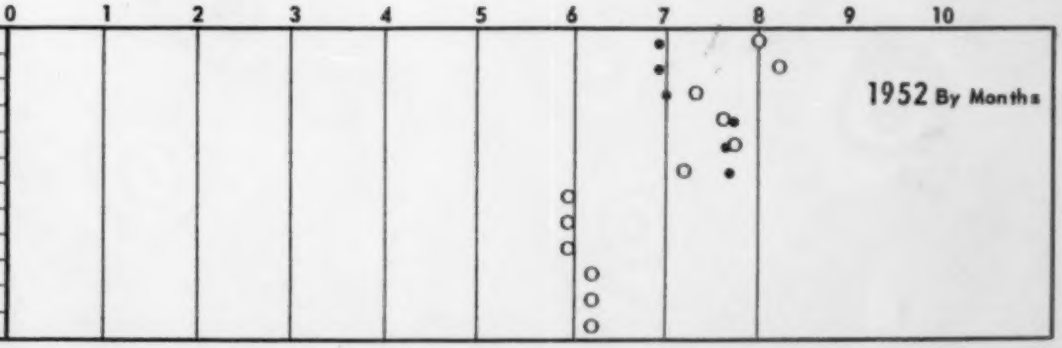


Exhibit C

METHOD OF COMPUTING RATE OF RETURN ON CAPITAL EXPENDITURES*

by Horace G. Hill, Jr.

The Research Committee of the Philadelphia Chapter believed that it would be rendering a real service to management in its planning efforts if it could discover the correct answer to the much debated problem of how a capital expenditure should be appraised, in both a relative and an absolute way. The Committee was aware of the absence of any uniformity throughout industry in the handling of this subject, and it was afraid that this implied that no known method could qualify as being generally satisfactory. However, it determined to make a cursory examination of local practices in order to become acquainted with the difficulties already recognized. The Committee believed that this background would enable it to avoid many mistakes in its intended research for the method which would be always reliable.

Current Practice

Some hasty exploration in the local field developed the following:

The Payout Period was most often referred to as the measure of profitability of a capital investment. It has many forms, depending upon particular definitions of what constitutes the initial investment and what consitituess the revenue through which it is paid back. It makes a statement such as, "This investment will be paid out in three years." In many companies this is considered as equivalent to a 33% rate of return, either by direct calculation or by implication, but most companies admit that the method is superficial although better than nothing. Its admitted weakness is in the absence of any attention to the period following the payout when the profit will be shown if it exists. The Committee recognized that the Payout Period might be a useful tool in comparing operations of identical characteristics, but it could not furnish a rate of return on any investment. For this reason the Committee laid it aside as holding no possibility of serving its purpose.

The First Year Profit, in relation to the initial investment, was occasionally offered as the means of measuring the desirability of an investment and was referred to as a rate of return. The Committee recognized that this method was even more inadequate than the Payout Period, in that is paid attention to only one year of operation, and it was also laid aside as being of no help.

The MAPI (or Terborgh) formula was found in use in some plants as a guide to a proper capital expenditure program. This system was developed by the Machinery and Allied Products Institute as an indicator of whether the current year was the right time to make a replacement. It has a limited field of application and it is not designed to show the expected rate of return on the proposed investment. For these reasons the Committee considered it to be a special tool for particular circumstances, but not a factor in the basic problem which the Committee had undertaken.

The Average Book Method was the name given to a system, used by many of the larger companies and employing forecasts of what the books will show during the life of the project. The general principle, common to all such systems, was the relating of average annual profit to the average book investment in plant. This method was much more comprehensive, in that it covered the whole active life of the investment, and it was based on data as they would later appear on the books. The Committee believed that the Average Book Method should be more fully explored in the hope of evolving a system which would merit general acceptance.

The Investor's Method was the name given to a plan of investment valuation by one company which had performed some research work on the problem of rate of return and had developed a method which it was finding helpful. The method uses only a listing of net cash expenditures or receipts in time table form. The discount rate which can be applied to this table of figures, so that the algebraic sum of the extensions is zero, is the rate of return on the investment. The Committee examined this method with interest and agreed that it should be considered along with the Average Book Method in the search for the one best method which would be satisfactory under any conditions.

The Committee found that a surprising number of companies had no system of evaluating or justifying a capital expenditure, but depended entirely on the judgment of their executives. This was merely an added incentive to develop something which could be offered to industry as a reliable measure to encourage the best use of capital funds.

Basic Assumptions

In the course of its preliminary inquiries the Committee was confronted with the usual objections to trying to govern capital expenditures by the single rule of "Rate of Return." The reasons most frequently given by companies which had no current

*Presented at the National Convention of the National Society for Business Budgeting at Milwaukee, Wisconsin, May 14-15, 1953, by Horace G. Hill, Jr. Mr. Hill, Budget Director of the Atlantic Refining Company, Philadelphia, Pennsylvania, made this report on behalf of the Research Committee of the Philadelphia Chapter of the Society.

interest in a systematized approach to the problem were:

a. It is impossible to look ten or twenty years ahead with sufficient accuracy to give the forecast any value.

b. There are intangible factors, other than profit, which can justify many projects.

c. Most capital expenditures are matters of necessity, and project justifications are superfluous.

d. There is no recognized method of computing a rate of return which is generally accepted.

The Committee weighed these objections, discussed them with companies where they were being apparently overcome, and agreed upon the following assumptions:

1. When the applicant for an appropriation is ready to be judged by the success of his venture throughout its life, and when his forecasts of volumes and prices and expenses have been checked by management's representatives, the long range look should be the best available and the only basis for an approval decision.

2. Basically the only excuse for appropriating funds is to make a profit and the applicant can make a reasonable estimate of his "intangible" advantages if management so directs.

3. There is always an alternative to every request which claims priority as being mandatory, and the money value can be stated in at least rough terms.

4. The Committee hopes that its study will provide a method of computing a rate of return which will appeal to industry as being realistic and dependable, so that its gradual acceptance will result.

Method of Working

The Committee made use of the ideas of companies contacted and the data employed in company studies wherever these could be made available. This gave the work a good start and avoided duplication of much effort. The readiness to permit the findings of individual companies to be used as a springboard for a broader study was much appreciated and made some real progress possible. For this reason, the Committee does not claim that the work described in the subsequent paragraphs is entirely original.

The Committee reviewed some experiments which were made in order to determine whether the inclusion or exclusion of income tax or general overhead would change the relative attractiveness of a random assortment of capital investments. It appeared that such factors could be applied as adjustments to a computed rate of return with an insignificant amount of resulting error, as compared with their detailed inclusion in the basic receipt and expenditure data. However, it was noted that each such factor would have its own correlation and the adjustments must be made separately. For instance, general overhead appeared to increase in proportion to the assets and the adjustment should be a subtraction of a certain percentage from the computed rate, but income tax varies with the profit and the adjustment should be multiplication of the computed rate by a certain percentage. This study satisfied the Committee that it could work without complicating every calculation with those extraneous factors.

The Committee then concentrated on the critical study of the two methods which had appeared logical on the surface – the Average Book Method and the Investor's Method. The Average Book Method, as previously mentioned, was used in various forms to suit the ideas of the particular company which was depending on it, but the principles were all the same. After some preliminary tests had been made of many of these various forms, it was found that they all reacted in similar manner to changes in the basic data, even though the degree of the reaction might vary. The Committee selected the form in most common use for the purpose of its detailed study. The two methods to be compared were then defined as follows:

The Average Book Method relates the average profit to the average net fixed asset remaining on the books, both averages being taken over the span of active operation of the project.

The Investor's Method relates the average profit to the average unreturned obligation, including interest at the highest rate which could be paid without producing a final deficit, both averages being taken over the span of utilization of funds in the project.

The Committee constructed the above definition of the Investor's Method in an attempt to show the similarities and the differences when compared to the Average Book Method. However, a clearer view may result from a completely independent statement, such as

The Investor's Method indicates the maximum rate of interest at which funds could be borrowed to finance the project without causing it to show an ultimate loss; or

The Investor's Method indicates the maximum discount rate which could be applied to all future net receipts so as to make their sum equal to the initial expenditure.

The Committee selected its test problems with a desire to be as realistic as possible. As a basic example it picked a project which would cost $40,000, operate for ten years, produce net receipts of $100,000 during its operation, and have a $60,000 profit to its credit when it retired. At first glance this would seem to portray all that is needed to compute a rate of return, but the Committee wanted to see how the different methods would react to various factors which are being met in actual practice. For instance, two projects might be presented by different departments in the same company, both meeting the above specifications and being similar in every other financial or accounting way except that:

1. One would charge the whole $40,000 to Plant while the other would see some way of charging half of it to expense.

2. One would depreciate the $40,000 by the straight line policy while the other would depreciate on a basis of production.

3. One would produce its net receipts uniformly while the other would produce heavily at the start and taper off to nothing.

4. One would completely exhaust its $40,000 investment while the other would have substantial salvage value remaining.

5. One would make its investment of $40,000 by instantaneous purchase while the other would laboriously construct over a period before operation.

These factors were selected for testing the methods because the relative merits of the alternatives were apparent in each case on a basis of common financial sense. The Committee's first aim was to find or develop a method which would always give a sensible answer, at least in a relative way. The factors were injected in varying degrees and both methods of computing the rate of return were applied to every case.

Results

After performing all the experiments which might throw any light on the problem, the results were brought together to see what findings were indicated. These were grouped according to the five factors mentioned above and the indications were as follows:

1. Varying Policy of Capitalization

There is always a twilight zone from which charges may be made with propriety to either Plant or Expense. The AVERAGE BOOK METHOD makes use of these decisions, which may even be based on a fluctuating policy, and the resulting rate of return on the project is affected inversely by the proportion of the outlay which is charged to Plant.

The INVESTOR'S METHOD pays no attention to accounting distinctions but deals solely with dollars required to make the project operative and dollars received from its operation. It, therefore, showed the same rate of return for all the test cases where the only difference was the policy of capitalization.

EXHIBIT #1 shows a pair of the examples used.

The Committee believed that the Investor's Method reflected the correct comparison between the two cases, and that it should not be assumed that a project would be made more attractive by charging part of its required outlay to expense.

2. Varying Policy of Amortization

In most large companies there are apt to be several established plans for recording plant exhaustion. The AVERAGE BOOK METHOD uses the plan which would be applied within the zone for which it was approved. If a project falls in a zone where high depreciation in early years is being taken, it will show a higher rate of return than an identical project subjected to straight line depreciation. This results from the lower average book investment in the first case as compared with the second.

The INVESTOR'S METHOD does not use the book write-off as an indication of return of invested funds, but depends entirely on the net cash receipts to provide the claimed profit and to reduce the outstanding investment. For this reason it showed that all the test cases would have the same rate of return where the only difference was the policy of plant amortization.

EXHIBIT #2 shows a pair of the examples used.

The Committee believed that the Investor's Method reflected the correct comparison between the two cases and that it was not fair to assume that a project could be made more valuable by applying a faster amortization policy except for whatever income tax benefit might be involved.

3. Varying Patterns of Cash Receipts

Some projects will perform with great uniformity throughout their life, but others will have their major advantages in early years before competition forces them down and eventually out.

The AVERAGE BOOK METHOD is based on the average annual profit in which the receipts in the final year have the same weight as those in the first year. This resulted in giving the same rate of return to all test cases in this group because they all had the same total profit.

The INVESTOR'S METHOD attaches considerable importance to the time factor and indicates that an early receipt is more valuable than a later one. For this reason it showed that all test cases in which the net receipts were higher in the first few years provided better rates of return, even though the total profit was unchanged for the life span.

EXHIBIT #3 shows a pair of the examples used.

The Committee believed that the Investor's Method reflected the correct comparison between the two cases because the speed at which the cash outlay would be recovered is a real factor in any financial evaluation. This is equivalent to saying that the Investor's Method gave a higher rate of return to the project with the shortest payout period when the total profit was the same in both cases.

4. Varying Salvage Value

This group of test cases was designed to test the reaction of each method of the inclusion of a superimposed salvage value at the close of the project life. This frequently occurs as the only difference between two projects and was a realistic test.

The AVERAGE BOOK METHOD generally showed a lower rate of return for the project which claimed residual salvage value. This was due to the fact that the average book investment would be increased more sharply than the average profit unless the profit were at a very low level.

The INVESTOR'S METHOD showed a higher rate of return in every case to which an expected salvage value had been added as the final cash receipt.

EXHIBIT #4 shows a pair of the examples used.

The Committee believed that the Investor's Method gave the logical answer in this comparison, because the future receipt at the time of salvage would always have some positive value even though it might be small when discounted at a high rate over the span of the project.

5. Pre-Operating Investment

Most capital expenditures involve a substantial outlay of funds before the earning power of the project can come into play. This may be normal construction time, necessary prior acquisition of property, or any other good reason.

The AVERAGE BOOK METHOD, as applied by all the companies contacted, ignores all such pre-operating investment on the ground that it is not capital even though the outlays have been inseparably linked with the project under review. On this basis the same rate of return was indicated for all the test cases in this group, whether the project started immediate operation of an instantaneous purchase or was forced to build up its investment gradually. The Committee recognized that a book method could be devised which would cover the pre-operating period when invested funds were not earning profit, but that it was not an accepted method.

The INVESTOR'S METHOD, which deals with only what goes into or out of the cash box, does not confine itself to the period of operation but considers all cash transactions as equally pertinent. It showed that a project, starting off from an instantaneous acquisition, had a real advantage and a higher rate of return than one which had to carry idle investment for any appreciable period.

EXHIBIT #5 shows a pair of examples used.

The Committee believed that the Investor's Method properly reflected this difference in the rate of return as reported to management, which the prevalent Average Book Method failed to do.

In all the above studies the Committee was viewing the methods as to their relative dependability to produce the logical answer. In every problem it found that the Average Book Method could give misleading information but that the Investor's Method always appeared to go in the right direction. This was an encouraging discovery and it led the Committee to make the further test of absolute dependability.

Whenever a rate of return is mentioned it is only natural to compare it, either mentally or conversationally, with the rate at which money might be procured. If the rate of return is believed to result from complete and sound basic data, if it has picked up income taxes and overhead expenses, if it has included probable growth in assets other than plant in its cash outlay, and if it shows a return which is substantially higher than the market cost of money, then the project is looked upon with favor and it is presented for an expected approval. But management must have faith in the method of computing the rate of return, which claims that money might be borrowed at any lower rate and still show some profit. The Committee tested the methods by assuming that money would be borrowed at the rate indicated by each method when applied to various test cases used in the prior studies. In every case it was found that the rate given by the Average Book Method could lead to serious trouble, but that the rate indicated by the Investor's Method could be actually used for borrowing money and the initial debt would be repaid at the end of the project's life.

EXHIBIT #6 shows one of these comparisons, taken from the test cases used in Group #1.

The Committee believed that the Investor's Method had demonstrated its ability to show a rate of return which was dependable in an absolute way, as well as being dependable in the relative sense of giving more reasonable answers than other methods.

The Committee was interested in knowing why one method seemed so eminently satisfactory while the other was not trustworthy, although the basic data for both would be taken from the same anticipated books of account. A little analysis showed two fundamental reasons. In the first place, a rate of return on a proposed outlay is a pure financial matter involving only the cash accounts, and any injection of non-cash book transaction tends only to confuse the picture and distort the result. In the second place, the time element is an essential factor in financial matters, and its omission leads to erroneous results. The Investor's Method made the best showing because it used only the cash transaction and it gave full weight to the time factor on each such transaction. The Average Book Method showed its inferiority because it supplemented the cash transactions by the inclusion of regular book charges and it gave no heed to the time factor.

At the risk of offering a caution which may be superfluous, the Committee realizes that dependability of a computed rate of return can be no greater than the accuracy of the submitted basic data. These data should include all risk factors and should indicate the reasonable expectancy against which the project's sponsor is willing to be judged.

The Committee was gratified to find that a special interest table had been constructed by the company which was employing the Investor's Method. Such a tool facilitates the practical application of the method, which is quite cumbersome if published interest tables must be used. This particular special table was compiled on a principle of continuous compounding instead of the usual procedure of compounding annually, semi-annually or quarterly. This is not an essential feature but it has some mechanical advantages of greater flexibility in using the table, and it seems reasonable when the dollar movements will be daily throughout the life of the project.

The Committee learned, in the course of its study, that Dr. Joel Dean had come out in favor of a method

which appeared to parallel the Investor's Method. Dr. Dean was contacted and it was found that the two systems were identical, although they had been developed independently. His whole-hearted endorsement gave added impetus to the Committee's growing conviction that it should make a specific recommendation, even though it might appear to be radical.

The Committee, with the assistance of Dr. Dean, gave the Philadelphia Chapter a brief introduction to the Investor's Method and recommended that it be endorsed by the Chapter for presentation to the National Society as Philadelphia's contribution. The Chapter members were sufficiently interested to set a time for a special meeting when they could concentrate on the one subject, have their questions answered as to theory and practice, and make up their individual minds as to whether they wished to support their Research Committee in recommending the method to the National Society. At that special meeting the Philadelphia Chapter adopted the report of its committee with its recommendations. It is now offering the Investor's Method, for computing the rate of return on a proposed outlay of funds, to this National Convention and to industry.

The Committee recognizes that this study covers only a portion of what might be termed "The Criteria for Sound Capital Expenditures," and it hopes that its successor in the Philadelphia Chapter will undertake one or more of the other facets which are equally obscure at the present time. Industry should have accepted answers to such questions as:

1. What constitutes a Capital Expenditure?

2. What is the company's current cost of capital funds?

It is probable that an answer to one such question will be proposed at the 1954 Convention in the hope that some degree of uniformity may be evolved in another of the "Capital" criteria which should be standardized for better use by management.

VARYING POLICY OF CAPITALIZATION

Case	PIPE LINE PROJECT	REFINERY PROJECT	EITHER PROJECT
	Booster Pump Authorized for $40,000 Net Receipts $10,000/yr. Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 10%	Still Rebuilding Authorized for $40,000 Net Receipts $10,000/yr. Life - 10 years Salvage - None Capitalized - 50% Depr. Rate - 10%	Authorized for $40,000 Net Receipts $10,000/yr. Life - 10 years Salvage - None
Method	AVERAGE BOOK	AVERAGE BOOK	INVESTOR'S

Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.	
0	(-40)				(-40)	20	(-20)		(-40)	Initial Investment
0- 1	10	4	6	38	10	2	8	19	10	is
1- 2	10	4	6	34	10	2	8	17	10	Roughly
2- 3	10	4	6	30	10	2	8	15	10	Balanced
3- 4	10	4	6	26	10	2	8	13	10	by
4- 5	10	4	6	22	10	2	8	11	10	Receipts
5- 6	10	4	6	18	10	2	8	9	10	Discounted
6- 7	10	4	6	14	10	2	8	7	10	to
7- 8	10	4	6	10	10	2	8	5	10	Zero Date
8- 9	10	4	6	6	10	2	8	3	10	at
9-10	10	4	6	2	10	2	8	1	10	
	60	40	60	200	60	40	60	100	60	22%

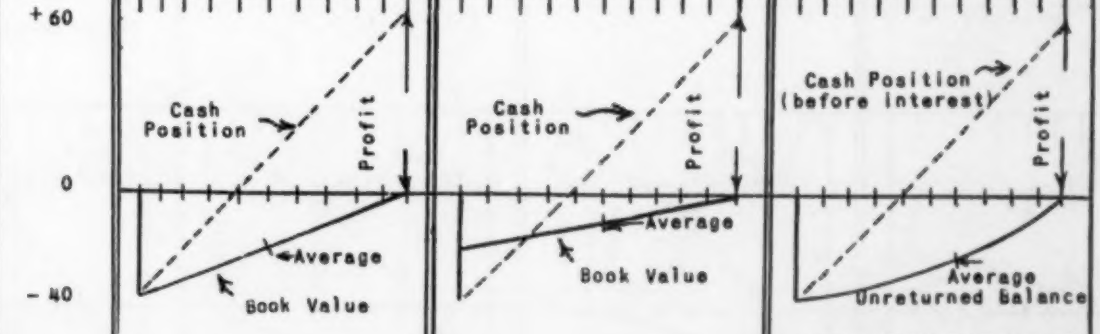
	Pipe Line	Refinery	Either
	Aver. Profit 6 Aver. Invest. 20	Aver. Profit 6 Aver. Invest. 10	Aver. Profit 6
	RETURN 30%	RETURN 60%	RETURN 22%

A-1 **A-2**

Total or Average Profit is the same in each case. Rates of Return vary inversely with Investment. Book Values Reflect Accounting Policies. Graphical Presentation shows why rates vary.

A-3

Unreturned Balance is Cash Position after 22% Interest Payments. It need not be calculated to find the Rate of Return.



(DATA FROM EXHIBIT #6)

EXHIBIT #1

VARYING POLICY OF AMORTIZATION

Case	PIPE LINE PROJECT Branch Line Authorized for $40 Declining Rec - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 5%				PRODUCING PROJECT Lease Development Authorized for $40 Declining Rec - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - varieble				REFINERY PROJECT Vacuum Still Authorized for $40 Declining Rec - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 10%				ANYONE OF THE THREE Authorized for $40 Declining Rec - Totaling $100 Life - 10 years Salvage - None	
Method	AVERAGE BOOK				AVERAGE BOOK				AVERAGE BOOK				INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest.	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest.	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest.	Net Cash Rec.	
0	(-40)				(-40)				(-40)				(-40)	→ Initial Investment
0- 1	19	2	17	39	19	7.6	11.4	36.2	19	4	15	38	19	is
1- 2	17	2	15	37	17	6.8	10.2	29.0	17	4	13	34	17	roughly
2- 3	15	2	13	35	15	6.0	9.0	22.6	15	4	11	30	15	Balanced
3- 4	13	2	11	33	13	5.2	7.8	17.0	13	4	9	26	13	by
4- 5	11	2	9	31	11	4.4	6.6	12.2	11	4	7	22	11	Receipts
5- 6	9	2	7	29	9	3.6	5.4	8.2	9	4	5	18	9	Discounted
6- 7	7	2	5	27	7	2.8	4.2	5.0	7	4	3	14	7	to
7- 8	5	2	3	25	5	2.0	3.0	2.6	5	4	1	10	5	Zero Date
8- 9	3	2	1	23	3	1.2	1.6	1.0	3	4	(-1)	6	3	at
9-10	1	2	(-1)	21	1	.4	.6	.4	1	4	(-3)	2	1	36%
	60	20	80	300	60	40.0	60.0	134.0	60	40	60	200	60	
	Aver. Profit 8 Aver. Invest. 30				Aver. Profit 6 Aver. Invest. 13.4				Aver. Profit 6 Aver. Invest. 20				Aver. Profit 6 Aver. Invest. 16.5	
	RETURN 27%				RETURN 45%				RETURN 30%				RETURN 36%	

The Total Cash Profit is the same in each case.
Rates of Return vary with the speed of depreciation.
Book Values reflect Accounting Policies.
Graphical Presentation shows why rates vary.

Unreturned Balance is cash position after 36% interest payments. It need not be calculated to find the rate of return.

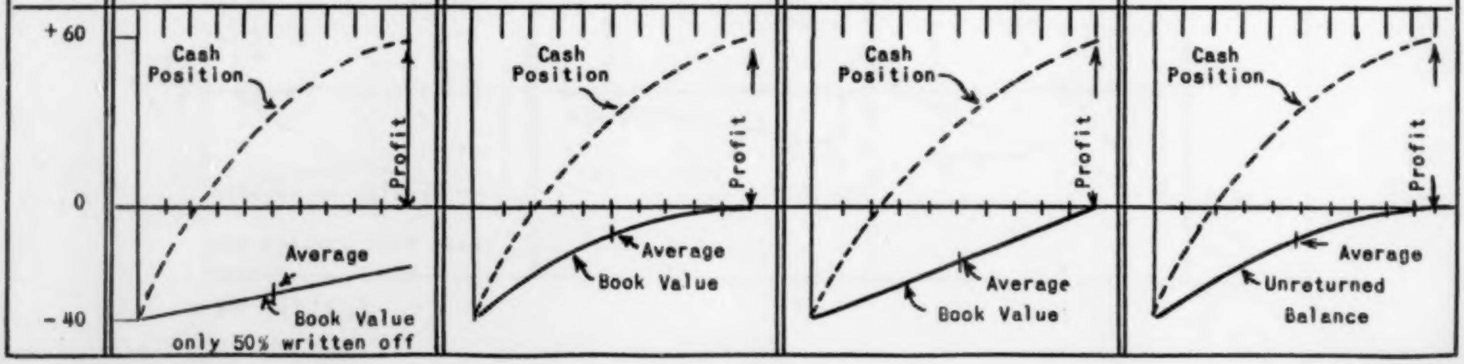


EXHIBIT #2

VARYING PAY-OUT PERIOD

Case	REFINERY PROJECT	SALES PROJECT
Case	Vacuum Still Authorized for $40 Declining Receipts - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 10%	Product Terminal Authorized for $40 Increasing Receipts - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 10%

Method	AVERAGE BOOK				INVESTOR'S		AVERAGE BOOK				INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.		Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.	
0	(-40)				(-40)	→ Initial investment	(-40)				(-40)	→ Initial investment
0- 1	19	4	15	38	19	is	1	4	(-3)	38	1	is
1- 2	17	4	13	34	17	roughly	3	4	(-1)	34	3	roughly
2- 3	15	4	11	30	15	balanced	5	4	1	30	5	balanced
3- 4	13	4	9	26	13	by	7	4	3	26	7	by
4- 5	11	4	7	22	11	Receipts	9	4	5	22	9	Receipts
5- 6	9	4	5	18	9	discounted	11	4	7	18	11	discounted
6- 7	7	4	3	14	7	to	13	4	9	14	13	to
7- 8	5	4	1	10	5	Zero Date	15	4	11	10	15	Zero Date
8- 9	3	4	(-1)	6	3	at	17	4	13	6	17	at
9-10	1	4	(-3)	2	1	36%	19	4	15	2	19	15%
	60	40	60	200	60		60	40	60	200	60	

	AVERAGE BOOK	INVESTOR'S	AVERAGE BOOK	INVESTOR'S
	Aver. Profit 6 Aver. Invest. 20	Aver. Profit 6 Aver. Invest. 16.5	Aver. Profit 6 Aver. Invest. 20	Aver. Profit 6 Aver. Invest. 40.5
	RETURN 30%	RETURN 36%	RETURN 30%	RETURN 15%
	A-1 2 Yr. Payout no better than 6 year.	A-2 Quick Payout gives higher rate.	B-1 6 Yr. Payout as good as 2 year.	B-2 Slow Payout gives lower rate.

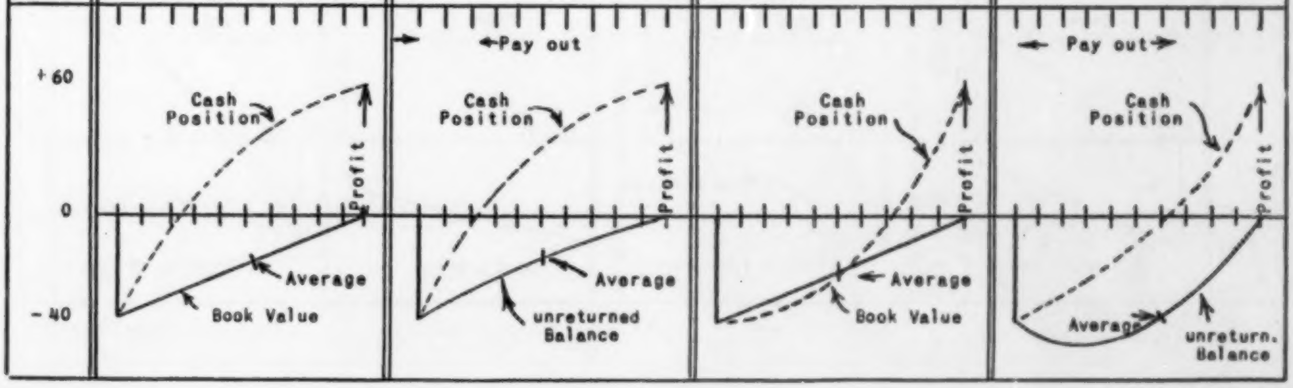


EXHIBIT #3

VARYING SALVAGE VALUE

Case	SALES PROJECT Service Station on Leased Land Authorized for $40 Declining Operating Receipts - Totaling $100 Life - 10 years Salvage - None Capitalized - 100% Depr. Rate - 10%	SALES PROJECT Service Station on Owned Land Authorized for $40 total (incl. $20 Land) Declining Operating Receipts - Totaling $100 Life - 10 years Salvage - $20 (Land Value) in addition to Oper. Rec. Capitalized - 100% Depr. Rate - 10% on $20

Method	AVERAGE BOOK				INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.	
0	(-40)				(-40)	→ Initial Investment
0- 1	19	4	15	38	19	is
1- 2	17	4	13	34	17	roughly
2- 3	15	4	11	30	15	balanced
3- 4	13	4	9	26	13	by
4- 5	11	4	7	22	11	Receipts
5- 6	9	4	5	18	9	discounted
6- 7	7	4	3	14	7	to
7- 8	5	4	1	10	5	Zero Date
8- 9	3	4	(-1)	6	3	at
9-10	1	4	(-3)	2	1	36%
10-Salv.	--	--	--	--	--	
	60	40	60	200	60	
	Aver. Profit 6 Aver. Invest. 20				Aver. Profit 6 Aver. Invest. 16.5	
	RETURN 30%				RETURN 36%	
	A-1 Same Rate of Return as Exhibit 1-(A-1) but pays off twice as fast.				A-2 Unreturned Balance is Cash Position after 36% Interest Payments. It need not be calculated to find the Rate of Return.	

Method	AVERAGE BOOK				INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest	Net Cash Rec.	
0	(-40)				(-40)	→ Initial Investment
0- 1	19	2	17	39	19	is
1- 2	17	2	15	37	17	roughly
2- 3	15	2	13	35	15	balanced
3- 4	13	2	11	33	13	by
4- 5	11	2	9	31	11	Receipts
5- 6	9	2	7	29	9	discounted
6- 7	7	2	5	27	7	to
7- 8	5	2	3	25	5	Zero Date
8- 9	3	2	1	23	3	at
9-10	1	2	(-1)	21	1	37%
10-Salv.	20	20	--	--	20	
	80	40	80	300	80	
	Aver. Profit 8 Aver. Invest. 30				Aver. Profit 8 Aver. Invest. 21.5	
	RETURN 27%				RETURN 37%	
	B-1 Addition of Salvage Profit can result in Lower Rate of Return, by increasing book investment.				B-2 Addition of Salvage Profit results in higher rate of return.	

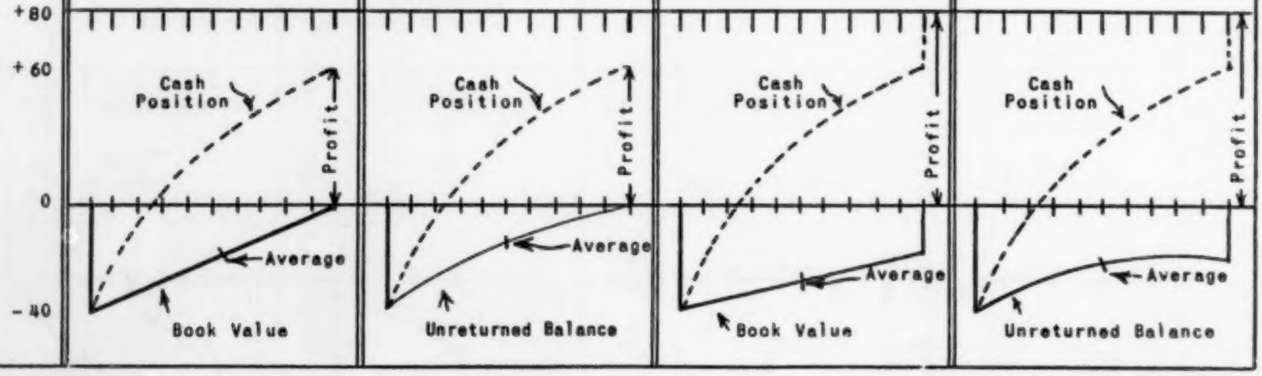


EXHIBIT #4

EFFECT OF PRE-OPERATING INVESTMENT

TERMINAL PUMP ADDITION

ACQUIRED FINISHED

Method	AVERAGE BOOK				INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book In-vest.	Net Cash Rec.	
0	(-40)				(-40)	Initial Investment is roughly balanced by Receipts discounted to Zero Date at 22%
0- 1	10	4	6	38	10	
1- 2	10	4	6	34	10	
2- 3	10	4	6	30	10	
3- 4	10	4	6	26	10	
4- 5	10	4	6	22	10	
5- 6	10	4	6	18	10	
6- 7	10	4	6	14	10	
7- 8	10	4	6	10	10	
8- 9	10	4	6	6	10	
9-10	10	4	6	2	10	
	60	40	60	200	60	
	Aver. Profit 6 Aver. Invest. 20				Aver. Profit 6 Aver. Invest 26.9	
	RETURN 30%				RETURN 22%	
	Same case as Exhibit #1.				Unreturned Balance is cash position after 22% interest payments. It need not be calculated to find rate of return.	

ACQUIRED SEMI-FINISHED

AVERAGE BOOK					INVESTOR'S	
Time Table	Net Cash Rec.	Book Write-off	Book Profit	Aver. Book Invest.	Net Cash Rec.	
0	(-20)				(-20)	Initial Investment is roughly balanced by Receipts discounted to Zero Date at 15%
0- 1	--	Not recognized as Project Investment		20	--	
1- 2	--			20	--	
2- 3	(-20)			30	(-20)	
3- 4	10	4	6	38	10	
4- 5	10	4	6	34	10	
5- 6	10	4	6	30	10	
6- 7	10	4	6	26	10	
7- 8	10	4	6	22	10	
8- 9	10	4	6	18	10	
9-10	10	4	6	14	10	
10-11	10	4	6	10	10	
11-12	10	4	6	6	10	
12-13	10	4	6	2	10	
	60	40	60	200	60	
Aver. Profit 6 Aver. Invest. 20					Aver. Profit 4.6 Aver. Invest. 31.6	
RETURN 30%					RETURN 15%	
Total profit same as before. Rate of return claimed as equal. 3 yrs. @ 0 % are ignored.					Unreturned Balance is cash position after 22% interest payments. It need not be calculated to find rate of return.	

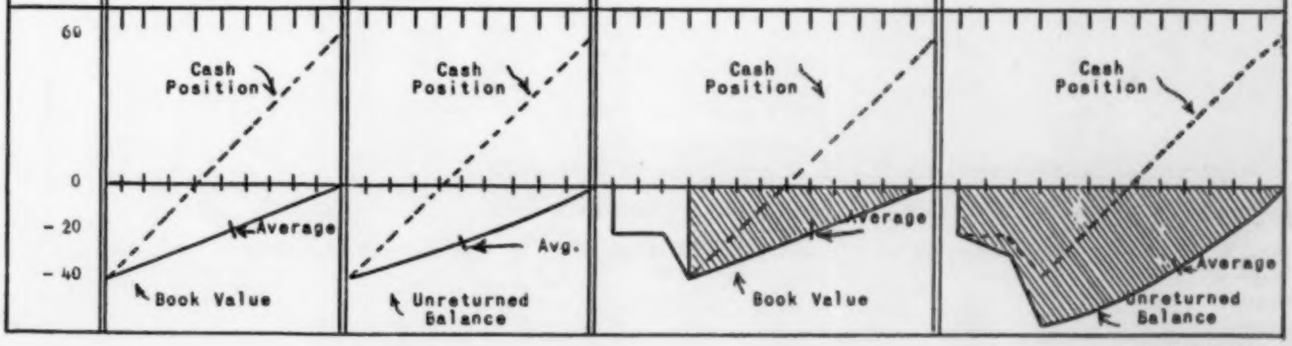


EXHIBIT #5

BORROWING AT INDICATED RATES

The Refinery project, shown in Exhibit #1, is described as:

An initial expenditure of $40,000 - 50% chargeable to expense;
An annual net cash receipt of $10,000 each year;
A life of 10 years with no salvage.

The Accounting Method rates this project at 60%.

The Investor's Method rates this project at 22% (actually 22.32%).

If money were actually borrowed at these to finance the project, what would be the status of the account at the end of the 10-year period?

	Opening Balance of Debt	Continuously Compounded at Claimed Rate	Credit for Compounding of $10,000 Receipts	Closing Balance of Debt
@ 22% - 1st Year	40,000	50,000	11,200	38,800
2	38,800	48,500	11,200	37,300
3	37,300	46,600	11,200	35,400
4	35,400	44,300	11,200	33,100
5	33,100	41,400	11,200	30,200
6	30,200	37,700	11,200	26,500
7	26,500	33,100	11,200	21,900
8	21,900	27,400	11,200	16,200
9	16,200	20,200	11,200	9,000
10	9,000	11,200	11,200	-
@ 60% - 1st Year	40,000	72,900	13,700	59,200
2	59,200	107,800	13,700	94,100
3	94,100	171,500	13,700	157,800
4	157,800	287,600	13,700	273,900
5	273,900	499,000	13,700	485,300
6	485,300	884,300	13,700	870,600
7	870,600	1,586,200	13,700	1,572,500
8	1,572,500	2,865,300	13,700	2,851,600
9	2,851,600	5,195,900	13,700	5,182,200
10	5,182,200	9,442,500	13,700	9,428,800

Borrowing at any rate less than 22% for this project will show profit.

Borrowing at any rate more than 22% for this project will show loss.

22% is the absolute evaluation as a financial transaction.

Exhibit #6

COMPOUNDING PERFORMANCE BEFORE REFERENCE POINT WHICH OCCURS:	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
A. IN AN INSTANT										
1 MONTH BEFORE	1.0177	1.0185	1.0194	1.0202	1.0211	1.0219	1.0228	1.0236	1.0245	1.0253
2 MONTHS "	1.0356	1.0373	1.0391	1.0408	1.0425	1.0443	1.0460	1.0478	1.0495	1.0513
3 " "	1.0539	1.0565	1.0592	1.0618	1.0645	1.0672	1.0698	1.0725	1.0752	1.0779
6 MONTHS BEFORE	1.1107	1.1163	1.1219	1.1275	1.1331	1.1388	1.1445	1.1503	1.1560	1.1618
9 " "	1.1706	1.1794	1.1883	1.1972	1.2062	1.2153	1.2245	1.2337	1.2430	1.2523
12 " "	1.2337	1.2461	1.2586	1.2712	1.2840	1.2969	1.3100	1.3231	1.3364	1.3499
1½ YEARS BEFORE	1.3703	1.3910	1.4120	1.4333	1.4550	1.4770	1.4993	1.5220	1.5450	1.5683
2 " "	1.5220	1.5527	1.5841	1.6161	1.6487	1.6820	1.7160	1.7507	1.7860	1.8221
2½ " "	1.6905	1.7333	1.7771	1.8221	1.8682	1.9155	1.9640	2.0138	2.0647	2.1170
3 " "	1.8776	1.9348	1.9937	2.0544	2.1170	2.1815	2.2479	2.3164	2.3869	2.4596
B. UNIFORMLY UNTIL REFERENCE POINT										
FROM 3 MONTHS BEFORE TO 0	1.0267	1.0280	1.0293	1.0306	1.0319	1.0332	1.0345	1.0358	1.0371	1.0385
" 6 " " " 0	1.0544	1.0571	1.0598	1.0625	1.0652	1.0679	1.0706	1.0734	1.0761	1.0789
" 9 " " " 0	1.0831	1.0872	1.0914	1.0957	1.0999	1.1042	1.1084	1.1128	1.1171	1.1214
" 12 " " " 0	1.1128	1.1185	1.1244	1.1302	1.1361	1.1420	1.1480	1.1540	1.1601	1.1662
FROM 2 YEARS BEFORE TO 0	1.2428	1.2562	1.2697	1.2835	1.2974	1.3116	1.3259	1.3405	1.3552	1.3702
" 3 " " " 0	1.3930	1.4164	1.4402	1.4645	1.4893	1.5147	1.5406	1.5671	1.5942	1.6218
DISCOUNTING PERFORMANCE AFTER REFERENCE POINT WHICH OCCURS:										
C. IN AN INSTANT										
1 YEAR LATER	.8106	.8025	.7945	.7866	.7788	.7711	.7634	.7558	.7483	.7408
2 YEARS "	.6570	.6440	.6313	.6188	.6065	.5945	.5827	.5712	.5599	.5488
3 " "	.5326	.5169	.5016	.4868	.4724	.4584	.4449	.4317	.4190	.4066
4 " "	.4317	.4148	.3985	.3829	.3679	.3535	.3396	.3263	.3135	.3012
5 " "	.3499	.3329	.3166	.3012	.2865	.2725	.2592	.2466	.2346	.2231
10 YEARS LATER	.1225	.1108	.1003	.0907	.0821	.0743	.0672	.0608	.0550	.0498
15 " "	.0429	.0369	.0317	.0273	.0235	.0202	.0174	.0150	.0129	.0111
20 " "	.0150	.0123	.0101	.0082	.0067	.0055	.0045	.0037	.0030	.0025
25 " "	.0052	.0041	.0032	.0025	.0019	.0015	.0012	.0009	.0007	.0006
30 " "	.0018	.0014	.0010	.0007	.0006	.0004	.0003	.0002	.0002	.0001
35 YEARS LATER	.0006	.0005	.0003	.0002	.0002	.0001	.0001	.0001	-	-
40 " "	.0002	.0002	.0001	.0001	-	-	-	-	-	-
45 " "	.0001	.0001	-	-	-	-	-	-	-	-
50 " "	-	-	-	-	-	-	-	-	-	-
D. UNIFORMLY OVER INDIVIDUAL YEARS										
FROM 0 TO 1 YEAR	.9020	.8976	.8933	.8890	.8848	.8806	.8764	.8722	.8681	.8640
" 1 " 2 YEARS	.7311	.7204	.7098	.6993	.6891	.6790	.6690	.6592	.6495	.6400
" 2 " 3 "	.5926	.5781	.5639	.5501	.5367	.5235	.5107	.4982	.4860	.4741
" 3 " 4 "	.4804	.4639	.4481	.4327	.4179	.4037	.3899	.3765	.3637	.3513
" 4 " 5 "	.3894	.3723	.3560	.3404	.3255	.3112	.2976	.2846	.2721	.2602
FROM 5 TO 6 YEARS	.3156	.2988	.2829	.2678	.2535	.2400	.2272	.2151	.2036	.1928
" 6 " 7 "	.2558	.2398	.2247	.2106	.1974	.1850	.1734	.1626	.1524	.1428
" 7 " 8 "	.2074	.1924	.1786	.1657	.1538	1427	.1324	.1229	.1140	.1058
" 8 " 9 "	.1681	.1544	.1419	.1303	.1197	.1100	.1011	.0929	.0853	.0784
" 9 " 10 "	.1363	.1239	.1127	.1025	.0933	.0848	.0772	.0702	0638	.0581
FROM 10 TO 11 YEARS	.1105	.0995	.0896	.0807	.0726	.0654	0589	.0530	.0478	.0430
" 11 " 12 "	.0895	.0798	.0711	.0634	.0566	.0504	.0450	.0401	.0357	.0319
" 12 " 13 "	.0726	.0641	.0565	.0499	.0441	.0389	.0343	.0303	.0267	.0236
" 13 " 14 "	.0588	.0514	.0449	.0393	.0343	.0300	0262	.0229	.0200	.0175
" 14 " 15 "	.0477	.0413	.0357	.0309	.0267	.0231	.0200	.0173	.0150	.0130
E. UNIFORMLY OVER 5 YEAR PERIODS										
FROM 0 TO 5 YEARS	.6191	.6065	.5942	.5823	.5708	.5596	.5487	.5381	.5279	.5179
" 5 " 10 "	.2166	.2019	.1882	.1754	.1635	.1525	.1422	.1327	.1238	.1156
" 10 " 15 "	.0758	.0672	.0596	.0528	.0469	.0416	.0369	.0327	.0290	.0258
" 15 " 20 "	.0265	.0224	.0189	.0159	.0134	.0113	.0096	.0081	.0068	.0058
" 20 " 25 "	.0093	.0074	.0060	.0048	.0038	.0031	.0025	.0020	.0016	.0013
FROM 25 TO 30 YEARS	.0032	.0025	.0019	.0014	.0011	.0008	.0006	.0005	.0004	.0003
" 30 " 35 "	.0011	.0008	.0006	.0004	.0003	.0002	.0002	.0001	.0001	.0001
" 35 " 40 "	.0004	.0003	.0002	.0001	.0001	.0001	-	-	-	-
" 40 " 45 "	.0001	.0001	.0001	-	-	-	-	-	-	-
" 45 " 50 "	.0000		-	-	-	-	-	-	-	-
F. DECLINING TO NOTHING AT CONSTANT RATE										
FROM 0 TO 5 YEARS	.7255	.7155	.7057	.6961	.6867	.6776	.6686	.6598	.6512	.6428
" 0 " 10 "	.5544	.5417	.5294	.5176	.5063	.4953	.4848	.4747	.4649	.4555
" 0 " 15 "	.4420	.4292	.4170	.4055	.3945	.3840	.3740	.3645	.3554	.3468
" 0 " 20 "	.3645	.3525	.3412	.3306	.3205	.3111	.3020	.2936	.2856	.2779
" 0 " 25 "	.3088	.2978	.2875	.2779	.2689	.2604	.2525	.2449	.2378	.2311
FROM 0 TO 30 YEARS	.2672	.2572	.2479	.2392	.2311	.2235	.2166	.2098	.2036	.1975
" 0 " 35 "	.2351	.2260	.2177	.2098	.2026	.1957	.1893	.1834	.1776	.1723

Exhibit #7

In constructing the tables, it was recognized that operators would vary in their selection of the zero date or reference point, and this selection does not change the results. The date of spending the first dollar, the date of starting operation, or any other date which might seem logical, could be adopted to suit personal preference. To provide for transactions which would occur before the selected zero date, it was necessary to use the principle of compounding, while all subsequent transactions would be subject to discount. It was also realized that some transactions would occur instantaneously while others would be spread over a period with some degree of probable uniformity.

Section A indicates factors to be applied to a transaction which will occur instantly and prior to zero date. Section B provides factors to be applied when the transaction is spread over the period before the zero date. Section C is the reciprocal of Section A and provides factors for discounting instantaneous transactions back to the zero date. Sections D and E apply to transactions which are uniformly spread over the stated periods. Section F is designed for a quick overall appraisal of a project from which the net cash receipts are expected to decline by an arithmetic progression from a maximum in the first year to zero at the end of its life. The use of the tables, a specimen sheet of which is shown as Exhibit #7, is illustrated by the following simple example:

Specimen Calculation

Using the example in Exhibit #1, the annual receipts are uniform and the time table may be stated in the simple terms below (Column A). Factors are taken from Table E in the Interest Tables at the trial rates selected (Columns B and D).

	Trial Rates of Interest				
	0%	22%		23%	
		Factor	Value	Factor	Value
	A	B	C	D	E
0	(-40)	1.0000	(-40)	1.0000	(-40)
0 to 5	50	.6065	30.3	.5942	29.7
5 to 10	50	.2019	10.1	.1882	9.4
	60		.4		(- .9)

At 0% there is an excess of $60,000
At 22% there is an excess of $ 400
At 23% there is a deficit of $ 900

The project rates at 22% plus.

By interpolation it is 22.32%

With a problem as simple as the above, an experienced operator would not have to go through even the few steps described. He would note that the ratio of initial outlay to a five year receipt was .80. He would then scan his interest table to see where the first two factors in Table E added up to .80. He would locate it at approximately 22%.

PART 3

BUDGETING, PEOPLE AND OPERATIONS

THE HUMAN BUDGET*

A budget can be defined as a statement of probable revenue and expenditure for the ensuing year; an early definition of the term was "a small sack or its contents, hence a loose bundle". As we look at the "human budget" in operation in business, both definitions fit under different circumstances.

Human behavior must be viewed objectively. Time and systematic action based on careful planning should be budgeted for human relations in business. In dealing with human relations, however, the complexity of human behavior requires special, individualized treatment of many particular situations allotted under contingencies. In the human budget of "surface behavior" 2 + 2 does not always equal 4; it may equal 22 or some other unexpected number. However, if we can find the true 2+2 in the "source data" underneath human behavior, the answer will be 4.

All human behavior is caused, has a purpose, fits a need or needs, and has a basic order to it. In fact, to the extent we know all of the influencing factors, human behavior is predictable. A person always does what he thinks is right or appropriate at the time of his behavior.

Modern management must become increasingly more aware that the behavior of employees must be understood and guided rather than merely judged and disciplined. All people have needs which direct their action toward goals, and frustrations occur along the way. Because of these frustrations people learn new courses of action or set different goals to satisfy their needs.

Management's Job

It is management's job to set work goals, train employees in new methods, and establish the proper amount of frustration in the form of work assignments, challenges, potential rewards, and knowledge of results sufficient to motivate but not block effective employee work behavior. This motivation of employees is a primary job of management.

The human budget of business must, therefore, allow appropriate expenditures of time, effort and money in the selection, placement, training, and motivation of employees. These functions, should be aimed at integrating persons into a total organization where individual differences are recognized but geared together for fluent human relations to give efficient performance.

The needs of all people at work are security (emotional, social and economic), status and recognition, and self-realization of personal achievement. These needs form the framework of all human relations in business. Effective business management recognizes these human needs and provides the necessary leadership to satisfy them.

The business manager as a leader sets the stage on which people act. His personal adjustment, desire to understand people, recognition of worker needs and individual differences, and awareness of group demands have a strong effect upon the personal adjustments and productivity of the employees he supervises. Much like a teacher he must be able to communicate necessary information and guide the development of his people.

Selling the Budget

Budget directors, aside from their human relations responsibilities as managers, have the problems of human relations involved in selling. Since much of the content of budget work deals with intangibles, estimates, and new ideas, it is highly important that budget directors sell themselves and their ideas to their associates. Therefore it is necessary that they use many of the fundamentals of salesmanship such as the following:

1. First, be sold themselves on the ideas or material they wish to promote.

2. Start a presentation "where the people are" – their particular interests, problems, and general language.

3. Concentrate on methods of communicating ideas – many approaches may be needed, but the ideas must have meaning and significance to the listener.

4. Be flexible in inter-personal relations – get the feelings and ideas of the other person; individualize contacts.

5. Welcome objections, comments, and criticisms – this gives indications of the needs, interests and concerns of the person; also this gives him a chance to participate and feel a part of the situation.

6. Look for subtle cues of the other person's thinking in both what is said and what is not said and how comments are given.

*Exerpts from speech presented by M. H. Forster, Training Director, S. C. Johnson & Son, Inc., Racine, Wisconsin, at the national conference of the National Society for Business Budgeting held in Milwaukee, Wisconsin, May 14, 1953.

7. Whether the behavior of the other person is pleasant or unpleasant persistently try to understand him.

8. Have a general plan, which is flexible, for presenting the matter at hand and conclude the presentation with a clear-cut statement of developments and responsibilities at that point.

The human budget as it is involved both in management and selling is grounded on the needs for giving specific attention to human relations instead of leaving this highly important business function to chance happenings. Human relations demand planning, coordination and constant attention parallel to the management of the other basic factors of business. However, systematic management of human relations is not reducible merely to cold procedures and rigid methods but is always dependent upon the flexible, personal touch which acknowledges group needs but recognizes individual differences.

BUDGETS AND PEOPLE*

The Impact of Budgets is on Problems – Not People

by Walter R. Bunge

The January-February 1953 issue of the Harvard Business Review contained an article entitled "Human Problems with Budgets." For those who know budgeting, this is indeed an arresting title. I have always thought that the properly administered budget helps to solve some of the human problems in industry, but, listen to the sub-title as it appears in that article: "The necessity for constantly increasing efficiency is a basic fact of business life. Budgets are utilized as a pressure device for that purpose. But, because of the effect of budgets on people they tend to generate forces which in the long run decrease efficiency."

A Nonrepresentative Description

This is something new; new at least to the current generation of budget officials as represented by the National Society for Business Budgeting. Could it be that a generation or so ago when business men, rugged individualists that they were, conceived the idea that a goal, or a well nigh impossible objective, could be called a budget and could then be used as a pressure device, a needling instrument, or a club? Such a program could conceivably have been devised by the "Gay Nineties" type of business man or perhaps by the overly paternalistic industrialist who, fearful that his paternalism might, after all, result in unwarranted laziness on the part of his subjects, attempted to forestall this anticipated result by a scheme which he imagined to be a system of checks and balances to offset the devious devices of the governed and which he then called by the euphonious term of Budgeting.

The article in the Harvard Business Review is a condensation of a booklet prepared by the same author, Mr. Chris Argyris, and entitled "The Impact Budgets on People." This was prepared for and published by the Controllership Foundation Incorporated. The contents of that book and the article which stemmed from it, are enough to make the hair of a good business man or a good psychologist stand on end. In fairness to the author and sponsor, it should be pointed out that they do not approve the methods and conditions they report, and they also offer suggestions. It is unfortunate, however, that the impression is created that budgeting in industry is as therein described.

It is hard to believe that what the article calls "The Budget People" are aligned on one side, rigid, arrogant, and biased, opposed to and opposed by an equally rigid, arrogant, and lazy group represented by the workers and supervisors in every other department. This survey would have us believe that this is quite literally true, and implies that the condition is rather general, a natural consequence of budgets.

The survey was based upon interviews of operating and financial supervisors of four plants, not one of which had more than 1,500 employees. Three of the four plants are branches of parent organizations, and the plants are located in relatively small towns. It is extremely unfortunate that such a poor sampling of American industry, representing what would certainly seem to be the most misguided budgeting techniques in use today, could form the basis of a report which purports to be budgeting as it is practiced in American industry. The very inference of the title is completely contrary to the very happy relationship which budgeting enjoys in several hundred of the leading companies of this country, which are members of the National Society for Business Budgeting.

In almost every human endeavor there are leaders; there is a large area of those who get along well if

*Reproduced from Technical Notes, Vol. I, No. 6, May, 1953. Mr. Bunge is Budget Director of Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin, and past president (1951-52) of The National Society for Business Budgeting.

not spectacularly, and there are a few whose distinction lies in their distortion of the very principles and devices which are incorporated so successfully by the vast majority. The amazing thing about this study is that the entire sampling – four companies – apparently lies in the latter minority group. The description of budgeting, its principles, its methods of operation and its techniques, has a flavor which is very reminiscent of Soviet Russia's description of capitalism as it operates in the United States. Russia has surrounded herself with an iron curtain, excludfrom herself the influence of successful practical operating capitalism, and then proceeds to describe her version of capitalism and the evils she imagines exists in a system which she will not try.

Developing the Budget

What is a company trying to achieve when it installs a budget? There are a number of objectives of a good modern budget program. Among these, perhaps the most important are the following:

1. To induce everyone who has responsibility for spending the company's money to carefully plan the best, most effective utilization of those funds. This involves the efficient use of personnel, material and machines, and it includes foremen, department heads, managers and the very highest executive personnel.

2. To provide the means of coordinating the plans of the divergent phases of a company to develop a more smoothly working organization.

3. To provide a basis of approved plans rather than past history with which to compare the actual operating results.

4. To provide a realistic and reliable means of forecasting profits, financial position, cash requirements and so forth.

It is not the purpose of this article to explain in detail the technical procedures used in operating a budget. It will be helpful, however, to explain the basic principles which underlie those procedures. Those principles are used in establishing every budget throughout the organization, but the principles can be illustrated by describing the round table type of discussion at which the budget of a manufacturing department is established.

It should be remembered that the objective is always to obtain the most realistic estimate possible of the operating conditions and operating costs of every department. The person most familiar with the department and best able to estimate its needs is the foreman or department head himself. Since his background information is in his own office, and since he feels most at ease in his own locale of operations, the budget establishment meetings are held in the foreman's office. He may want the assistance of a clerk, an assistant foreman or someone else, and if he does, he needs but to ask them. The result will be a better budget. In addition to the foreman and any assistants he may want, his own immediate superior, probably the superintendent, is present and also a representative of the works manager. The fourth official member of the group is a representative of the budget department. This group reviews the current trend of expenditures, the prospects for volume for the future, the effect of such volume on both direct and indirect personnel, overtime, supplies, defective costs, training costs and so on.

In the atmosphere of a friendly discussion, the foreman gradually evaluates all of his needs in the form of a tentative budget. The budget department representative is there to answer any questions on procedures, accounting or policies, and generally guides the participants over the rough spots. He and the foreman both have copies of the department's recent statement showing previous experience and he supplies information on general company plans as to volume, wage rates and other matters which will affect the foreman's budget.

The superintendent and particularly the representative of general manufacturing will be able to contribute information on plans for expansions or changes in facilities and equipment in the department which may affect operating costs but which plans may not yet have been announced. The effect on the department of plans in another department, such as the one which performs the preceding operation, will be discussed. This is also frequently an opportunity which the foreman seizes to explain and discuss difficulties he has encountered because of his inability to get supplies when he wants them, or his dissatisfaction with specific shop procedures which he feels somewhat hamper his operations.

It is obvious that there is no attempt on the part of the budget department to "brow-beat" the operating departments. The emphasis is on cooperative development of the best operating plans for the company as a whole. In these meetings the budget man is outnumbered at least three to one and the shop personnel are on their home grounds. Every attempt is made by the budget department to select as a representative, a person who appreciates the viewpoint of the shop and who has had experience in working out problems with various shop departments. He acts as a technical advisor and helps the shop people in the somewhat unfamiliar task of getting their plans down on paper where they can get a good look at them. The budget man is also familiar with accounting procedures and policies and the interrelationship of the various departments and the affect of all these things on the costs of the department that is being budgeted. He realizes that it is not any easier for the employee of the manufacturing department to grasp the intricacies of the budget than it is for the budget man to understand all of the workings of one of the foreman's highly complicated machines. In discussing problems with the various departments, the language and terminologies of the department involved are used as much as possible.

It is understood by all that these budgets are still tentative, as are the budgets made by other managers,

administrative as well as manufacturing, until the final combined budget of the entire company indicates that a satisfactory operating arrangement has been achieved. The tentative departmental budgets are then assembled by the budget department according to the organization scheme of the company, and are reviewed with the respective executives. If it seems necessary to make any changes, those changes are discussed and fully explained to the foreman or other department head involved. They will constitute changes in his basic plan of operations for the year.

Administering the Budget

Ultimately the budget is completed and everyone has a copy of the budget or budget formula applicable to his own department. As the year progresses, periodic reports, usually weekly or monthly, are prepared showing a comparison of the planned operations at the level achieved (as indicated by the budget) with the actual operations. Any major deviations between these two sets of figures will be highlighted.

Since the foreman has his own budget formula he can compute, ahead of time, what his budget allowance will be at the level at which he is operating. He also signs all the requisitions or otherwise initiates his own expenditures. He is therefore in a position to explain major deviations. To assist him in this, the accounting department provides him with any detailed information he needs in regard to the expenses in any account.

This accountability, which is the essential concomitant of responsibility, is anticipated. For that reason the foreman very frequently calls upon the budget department for help in analyzing the reasons for a disturbing trend in expenses which seems to be developing and which is indicated in his periodical departmental statements. The budget department also is alert to discover developing trends in any department.

The budget department than immediately works with the foreman and his department in tracking down the reason for the increase in cost and gives him any help it can to relieve the situation. Such help might consist of discussion of a similar problem in another department and the way it was solved, or might involve calling in some specialist such as the industrial engineering department or staff people within the manufacturing organization. The point that is stressed is that the budget department is assisting the foreman to improve his operations and to make a good showing for himself. The budget department remains in the background; the credit for achievement goes to the foreman and to the manufacturing department or to the sales or engineering or administrative department if that is where the assistance has been given. It would be extremely shortsighted and fatal, and I might add just a bit juvenile, for the budget department to run gleefully to top management with each of the many little irregularities it finds. The effect would be precisely the opposite of that desired. It is scarcely conceivable that this is the procedure reported in Mr. Argyris's paper, and yet it is so. That is neither good budgeting nor good management; nor for that matter is it good psychology.

Let it not be thought that the described method of handling the budgetary control phase of management is in any sense a favored "Spoiled Child" treatment of a situation. Work on the budget is a difficult, exacting, but satisfying task. All of the concentrated planning which goes into that relatively short period of establishment bears fruit in the freedom from planning worries which would otherwise tend to crop up at frequent intervals throughout the year. Top management and foremen as well are both happily confident that a definite plan has been established and will be followed except if conditions drastically change, which situation will be apparent. The follow-up work helps keep operations according to approved plans.

The budget has also provided a very useful means of communication from lower operating to higher executive management levels which does not otherwise exist. This is highly important for the efficiency of any company. Many a foreman has been so frustrated by his inability to channel his ideas directly up the line of management that he has given up in disgust any attempt at efficiency.

All of this does not mean that the budget department avoids direct communication with top management officials. This is also an important budget function, but it consists largely in reporting the trend of company operations, in reporting areas which require attention and the reasons therefore, and in adjusting forecasts of profit and loss and balance sheet statements in the light of any changed conditions which may exist. It is not management's duty to be constantly concerned about the detailed operations and minor pitfalls of the multitudinous areas within the company. This would leave management no time for its important task of top level administration. Top management looks at the whole picture and it is the whole picture which is interpreted for them. Any detail within any department can readily be explained, but such requests are rare and usually a part of specialized studies. Down the level of management, each successive group receives more and more detailed information as it is concerned more and more directly with the detailed operations. At every level throughout the entire organization an attempt is made to find and correct discrepancies and inefficiencies and let the department itself actually make the correction and take the credit for it. In this way everyone operating under the budget is thankful for the budget; for not only is it a help in operating efficiently which everyone really wants to do, but it is also a means of proving to superiors that efficiency has been maintained and is being improved. This is an automatic result of the budget statements.

If difficult operating conditions develop and it becomes impossible to live within the budget, the budget itself becomes an excellent proof of those conditions and helps a foreman to obtain manage-

ment approval for new equipment, changes in procedure or whatever else is necessary to restore or improve efficiency. It should be remembered that by the time this point is reached it is quite likely that the problem will have been studied and the foreman will have expert backing for his arguments.

Conclusion

The principles described above are in general use with suitable local variations in a great many of this country's progressive firms. Many of them are members of the National Society for Business Budgeting and discuss these and related problems and techniques at meetings of the organization. Better and better methods are being developed and they always tend to go more and more toward cooperative work with informed and interested foremen and department heads who are treated as what they are: a portion of the management team.

I have used a definition of budgeting and budgetary control in a number of talks. A copy of this definition has often been requested because it so exactly describes the spirit and the work of budgeting. Here it is: "A budget is a written coordinated plan of operations of an enterprise expressed in money values, both its income and expenditures, and the resulting effect on profits and the financial condition. Budgetary Control involves a continuing cooperative effort to administer the affairs of the enterprise so that the planned objectives are achieved if possible, or that the necessary alternative measures represent the considered and enlightened best judgment under the new circumstances."

Budgeting is actually a phase of management in operation. Let us then encourage wise management and not impute the foibles of isolated instances of foolish mismanagement to budgeting or to any other generic group. Rather, let us recognize these as variants, examples of misguided humanity and not the basis from which to draw conclusions which may hurt some of the oldest principles of good management. The general principles of budgeting were used at least since the time of Joseph, since that is the oldest recorded instance of its use. Surely we have progressed since 1500 B. C. Our well managed companies are ample and cogent proof of this.

TECHNIQUES OF PLANNING AND CONTROL IN OPERATIONS*

by Boyd S. Oberlink

It's a pleasure for me to be here this morning, to have the opportunity of speaking to you and to join with my fellow Milwaukeeans in welcoming you to our home town. I hope that in addition to a profitable meeting, you will have a pleasant time in Milwaukee. I note that tonight you are to be the guests of two of our famous "host" companies. I'm sure that you will enjoy that very much.

When Walter Bunge asked me to speak here today I'm afraid I said "yes" too fast, for on further thought I had trouble in determining what I should say to you. I knew I couldn't pose as an expert on "budgeting" for I've never been successful in establishing one for my wife and family and I assume that to be a number-one qualification for membership in this organization. In fact, I can't pose as an expert on any subject today because I can't qualify as being more than 50 miles from home on an expense account. Finally, by the process of elimination I decided that I was going to have a rough time of it if I tried to think of something to tell you that you didn't already know; and that I'd better content myself with reminding you of some of the basic things that you do already know, but perhaps hadn't thought of recently.

Basic Problems

So, I'm not going to talk much about budgeting today, for I observe from your program that you'll be doing plenty of that in these two days of your meeting. However, I can't let this opportunity pass without making an observation regarding a couple of problems which I suspect most "budgeteers" have or will experience.

First of all, it has been my experience that when management is first approached on the proposition of using a budget as an implement of control, they are inclined to view the proposal with suspicion, skepticism and sometimes with outright opposition. I suspect several reasons for this... for one thing the very name "budget" has acquired perhaps, to the unenlightened, a connotation of limitation... of some thing or some one trying to tell "me what I can't do."

*Presented at the National Conference of the National Society for Business Budgeting at Milwaukee, Wis., May 14-15, 1953. Mr. Oberlink is Vice President, Tractor Division, Allis-Chalmers Mfg. Co., Milwaukee, Wis.

And when I mentioned management a moment ago, I meant "management all the way" including the Superintendents and Foremen in the shops. For when all is said and done it is the folks at the working level who finally make a budget management program a success or a failure. They must understand that their budget is not a fixed and rigid thing – handcuffs on their operations and a club over their heads– but that it is their forecast of the kind of a job they expect to do, their part in the management planning of the company operations, and their yardstick of accomplishment as the year progresses. They need to realize that the condition of the "cash box" in their company may be greatly affected through the year by the accuracy with which they do their budget work.

This all takes some selling in the first instance and some decent administration in the second. Any time top management starts using a departmental budget as a club, the recipient of the beating will be inclined to put some padding on the club – and any time top management starts using the departmental budget as an excuse for not doing something which the "Department" thinks should be done they begin to believe in the "handcuff" idea. In other words, the concept, the structure and the use of a budget must be consistent throughout the management team.

One other thing I'd like to suggest before I leave this topic, is that you, "the budgeteers", must have some flexibility in your make up. I'm quite certain that there are no two companies in the world who have exactly the same kind of management organization, operations, and problems. I'm even more certain that no two different-company managements use exactly the same kind of statistics, philosophies, and judgment in the solution of their management problems, so it's up to you fellows as individuals to tailor make the budget tools with which your management people can work – comfortably and with confidence.

You don't like to see your management flying by the "seat of their pants" and management isn't apt to try to fly by a set of statistics which mean nothing to them. So know your men, know how they think, and what they want to know – don't be carried away too much with what you think they ought to know – and build to fit your man. Don't try to build a device by which you can fly the business from your seat, – – not until you've been licensed as a pilot. And now having dispensed what is probably a lot of unneeded advice I'll try to get on with the subject I'm supposed to discuss here today – that is "Techniques of Planning and Control in Operations."

Management Fundamentals

I had a professor one time in Machine Design – and we thought that he was a "stinker" – he wouldn't let us use a formula unless we could develop it – clearly establish the basic principles and all of the assumptions which went into its makeup, and then to justify the applicability of these assumptions to the problem at hand. I can still hear him say: "Oberlink – you've got to get back to fundamentals." I hope I never forget his teaching.

So, I'd like to try, for a few minutes, to get back to some fundamentals in business management with you:

1. First of all, it seems to me, if we are to properly plan and organize for the business we hope to operate, we must break it down into its simplest form, establish our basic concepts and outline the principle functions required to make it run.

2. Then on this framework we must build an operating organization along these functional lines giving it staff support at the proper points. At this stage of our thinking we must be careful that we don't bog down in too many details – they can come later.

3. And, having organized our team we should next establish general areas of responsibility and authority – but don't try to define them too closely. I believe that we too often limit the efficiency of our team by restricting the activities of our players, and trying to make too many decisions from the bench.

4. Next, we should jointly define our objectives and determine on the general policy of our operations to reflect the business philosophy of our management team.

5. And having done this we must find a way of passing this philosophy and these policies down through our organization so that everyone is heading in the same direction and at about the same speed.

I have for a long time, held to the belief that we can do our best job in this direction by telling our story of "What and Why", and leaving the "How" to the ingenuity of the people to whom the various pieces of the job have been handed. However, while I believe in this as a general principle, I know full well that no such system can be successful without much coordination and control. The point I want to make is that we should start with as much freedom in operation as possible and establish our control points and coordination techniques so that we get what we must have to run the business with a minimum restriction on individual and organizational resourcefulness and enthusiasm.

I couldn't hope, in the few minutes I have, to develop this philosophy in detail. In fact, if I were to try, I expect I'd become entangled in my own web of explanation. But I would like, with your indulgence, to illustrate a few points and to demonstrate some of the planning and control techniques we use in the Tractor Division of our Company.

A Case Illustration

Briefly, our Company is made up of two principal Operating Divisions and several Staff Divisions. For my purpose here, I'll stick generally to the Operating end of the Tractor Division. First of all, we say to ourselves that fundamentally our business

is that of developing and designing, manufacturing and selling tractors, farm and road machinery – so we organize ourselves along those lines, with Vice Presidents in charge of Engineering, in charge of Manufacturing, in charge of Sales and an Administrative Vice President all reporting to Vice President in Charge of the Division.

1. Engineering.

Engineering then picks up the function of development and design. To fulfill their function they must be alert, keep up to date with modern materials, methods, and engineering science, and above all, must keep in tune with the customers' wants. Their objective is to design equipment the customer needs, that he will want to buy and for a price he can afford to pay. They must stay ahead of competition and must devote their time and efforts to those projects which are most necessary to the business and which will "pay off."

You'll note that I refer strongly to "the customer" – and Engineering's principal, though not only, point of contact and source of information regarding this very important person comes through the Sales Organization. So we must promote a close relationship between Engineering and Sales interposing only those minimum of controls and coordinating activities which are necessary to keep the program moving.

In analyzing the need for such coordination and control we find two principal purposes. First, we want to foster between Sales and Engineering, a freedom of ideas, and exchange of information, a common goal and a mutual confidence, with "no buck passing." Second, we want to be as certain as we can that we spend our Engineering talent and money on those things we need most in our business, and those which have the best chance of paying off in the end.

We try to accomplish these things through two different devices.

Suggested Additions

Number one – any one in our organization can suggest the addition of a new product to our line or a change in an existing product. With Sales Department concurrence, this suggestion goes to Engineering for a very preliminary estimate of feasibility and probable time and cost of development. Having this estimate of the situation, a joint management group decides whether the proposal merits full development status and appropriation. A further check point comes after development and tests are complete or nearly so. At this point, both Engineering and Sales report on the suitability of the product, and the forecast of market. Manufacturing, which has been watching this whole thing very closely makes a preliminary "guess-timate" of facility and tool requirements and probable cost of product. Then if the product and market look good, the probable selling price looks attractive, and the capital expenditures appear reasonable, the project is approved for final design, and manufacturing planning and estimating for production. There is one more check before production starts and I'll come to that under Manufacturing functions.

Development Meetings

Number two – the second device we use for controlling our Engineering activities and coordinating them with our total program is that of having quarterly development meetings – Engineering, Manufacturing, Sales, Accounting and Patent people are represented in these meetings and the responsible Engineering authority reviews with the group the status of all development projects on the books. In this way, all concerned are kept advised of progress, opportunity is given for criticism and suggestions and the group agrees on priority with which the various projects are pushed forward, and the target dates for completion. We try in this meeting to restrain the Sales Department's natural inclination to want everything immediately, and on the other side of the question, we encourage the Engineering Department to accept something less than utter perfection in the interest of finally getting into production. This is always a compromise, and it must be a good one. Our Engineering Departments all operate on a budget and that budget is reviewed quarterly at the development meeting, at which time we also approve development appropriations for the succeeding quarter. Every effort is made to devote our development money to jobs that will pay off with increased sales volume.

2. Manufacturing

Our Manufacturing Organization, of course, takes the second of our principal operating roles, that of building our machinery. We expect them to do the impossible. Most of the time – we want estimates without drawings, we want production before the blue prints are dry, we expect a perfect product at a lower cost, and we want more of some things and fewer of others on about 30 minutes notice.

Theirs is really a job of organization and coordination, and we want to give them all the flexibility we can, again imposing only those controls and coordinating devices which are needed to help them perform their function as it relates to our total objective. Here we have four principle points of control, viz.

1. Authorizing and scheduling production
2. Watching inventories
3. Following and checking costs and
4. Watching capital expenditures

Production Schedule

First of all Management must coordinate Sales requirements and Manufacturing schedules. We give the Sales Department the responsibility for determining their requirements as to quantity, time and rate of delivery and then with them we work out with Manufacturing, schedules which will meet these requirements as nearly as we can. We try very hard to establish these schedules so that we can run our shops on a continuous basis, and if possible on year-

around schedules. Where year-around schedules are not possible because of the very seasonable nature of the market, we try to dovetail different products into a given facility so we can maintain such operation. The advantages of maintaining reasonably constant levels of employment are self-evident, and this is becoming of ever-increasing importance to satisfactory and efficient plant operation.

Our serious attempt at such an operation makes our job of sales forecasting or "budgeting" and of finished inventory distribution pretty difficult and most important to our final success. Once our schedules are agreed upon, they cannot be changed by any one except the top management group, and while the Sales Department works very closely with the Manufacturing Department, they do not have any direct authority over production schedules. We follow this entire matter by using a stock authorization system which requires the Sales and Manufacturing Departments to request authorization for all machinery to be built in "lot" quantities and at the pre-determined schedules.

Inventory

Manufacturing, working with the Purchasing Department, is responsible for establishing lead times required to meet these schedules, but we make every effort to keep these lead times to a minimum in order to control inventory in the factory and to keep to a minimum our long-term purchase commitments. In times of material shortages, this is a very difficult problem and many times top management must take a firm position in order to keep inventories and commitments within the realm of reason. Sometimes we deliberately jeopardize our operating schedules rather than overcommit ourselves in those areas.

Costs

Another and one of the most important control activities in the manufacturing operation is watching our cost. The Manufacturing Department must be fighting costs all the time and this is another point in which our accounting organization and our budget people are very helpful to us. It is difficult to overemphasize the importance to top management of knowing exactly and currently how the costs of our products are running. It seems that any time a cost figure is more than a few hours old, it becomes awfully difficult to run it down and pin it down in the manufacturing operation, and that is why we carry our Budget-Management Program right down to the departmental level. Labor efficiency in the manufacturing operation is sometimes difficult to measure and yet that efficiency as reflected both in direct labor and burden labor represents perhaps the greatest point of waste in our productive effort. Bad practices, once established, are hard to locate and harder to correct.

We use a system in our organization of studying costs through an established "Cost Reduction Committee" involving Engineering, Manufacturing, and Purchasing Department representatives who study in detail, part by part our costs and their make-up. Frankly, we may be a little unfair sometimes, but we try to keep our Manufacturing Department on their toes by authorizing our Engineering Department and our Purchasing Department to specify and buy anything they want on the outside if they can get it more cheaply than it's made in the shop. I know I could get into a lot of discussions on that point on the subject of under-absorbed burdens, etc., and I suppose that if it ever became necessary to carry this idea too far in actual practice, we might be faced with a problem. However, so far we find that we don't have to take very many items away from the shop for outside procurement before they are back with a new, better, and cheaper way of getting the job done.

Capital Investment

With respect to capital investment for machine tools and facilities, we try to consider each requirement very carefully. Sometimes it is pretty easy to get carried away by Sales Department enthusiasm and to find out that we set up to build much more than we can sell. We try also to look with a jaundiced eye at some of the requirements which Manufacturing Departments make out as very desirable but which border on the luxurious. In other words, we try to be a little conservative in making capital investments to be sure that those investments will pay off in additional sales volume and profit and to be equally sure that our capital structure will permit such investments. We hope we never get "plant poor."

Pretty generally, we use this same conservative approach in our replacement policy. We try to keep our plants in good repair so that we can get an efficient operation and make some money. We try not to become over-impressed with some of the fancy theories nor try to outsmart the Internal Revenue Department. If replacement is made it is done on the basis that it is a good investment of our capital resources.

And, finally, we take our Manufacturing organization into our complete confidence with respect to our entire business operation. We give them monthly, in addition to their operating report, with reference to their budget, a complete profit and loss statement on that part of our business with which their products are concerned, and at regular intervals we review these statements, together with the statement for the total Division, with them. We think it important that they know what happens to that part of the "Sales Dollar" which goes for other than material, labor and burden.

3. Sales

Our third principal operating function and the one which culminates all our efforts is the one which is shouldered by the Sales Department. They have the job of finding the prospects, selling them our product, getting the money, giving them service, keeping them happy and bringing them back for more. If there's any one part of our organization which needs flexibility and freedom from undue restriction, it's the Sales Department. A salesman must

live by his wits, his enthusiasm for his product and his ability – yes, his eagerness to take on all comers. He can't spend all his time making reports, yet there are some things we just have to know.

You are familiar with the customary advertising, demonstrations and personal contact type of selling, and we use all of them. It is, of course, impossible for us as a company to reach the customer directly and so we do it through our dealer organization. We try to organize our sales and service educational programs so that we can get them down to the dealer level in complete and factual form and then we encourage and assist those dealers in carrying that program on through to the customers. We try never to forget that "service" in the form of repair parts, mechanical service, and operating assistance is a necessary follow-up to the initial sales and to the continuing success of our business.

Three important parts of the sales program require coordination and control; they are inventories, collections, and selling expense.

Inventories

We must carry heavy inventories of finished machinery and repair parts out in the field near the customer, for our customers traditionally buy machinery on a seasonal basis, and repair parts must be quickly available in case of breakdown. In farming operations, the machinery must be kept operating or time and weather may get the crop. We keep a perpetual inventory of all machinery in our branch and dealer hands which has not been sold at retail. We receive weekly reports on sales and monthly reports on inventories and the two balance out. We try always to keep our inventory current and alive – keep it moving. Any time either machinery or parts stay in one place very long we start looking for a new home for them. Old inventory doesn't sell well.

Collections

Another check-point in our control system is our follow-up on settlements, as we call them, which is another way of saying watching our credits and collections. We had a credit manager many years ago who taught all of us as we came into the organization that a sale wasn't complete until we had the money. So we follow this very closely and keep our receivables current. As you may know, it is rather common practice in our industry to floor-plan or carry the inventory of machinery for our dealers for a reasonable period of time or until it is sold. Sometimes I think that we have been a little too lenient in carrying this inventory, for of course, we always need the money. However, there is an offsetting advantage to us in keeping our fingers on that inventory until it moves into the retail hands because by keeping track of it we know very accurately how our product is selling and we don't suddenly find our outlets blocked with inventories paid foı but not sold. We try always to be realistic and to face the facts as they are. Any time we find our products are not moving to the customer as fast as we had planned, and after we have checked the reasons, we don't hesitate to cut schedules to prevent overloading our dealers and our own inventories.

Selling Expenses

There are a couple other places where we try to establish control points. We watch our branch house distribution expenses very closely. We try to keep reports from the field to a minimum, asking for only those which we feel are necessary to over-all control. We watch expense accounts – they are a key to many things in judging the performance of our sales people. Often we are able to help those people plan their time, organize their work and cut down on travelling. In the branch house itself we try to standardize only those procedures which are absolutely essential to tie in with the over-all operation – we try not to carry these things too far, recognizing that we can over-organize and over-staff small operations. Another point of coordination is that of working very closely with our dealer organization to be sure that they are set up to carry out a good business operation. We try to assist them in establishing a sound financial program at their bank and a sound trading policy with their customers. We know that our whole selling program is, in the final analysis, dependent on strong, healthy. well-run dealerships. And, finally, we believe that sales results must be rewarded. Salesmen, by nature, are enthusiastic people and we try always to keep them enthused, keep them selling.

Summary

Now, I haven't tried to talk about detail control techniques here today; you are familiar with those of Accounting practice, but rather I've tried to talk a general philosophy of management and in conclusion I'd like to summarize the things I've tried to say in these few words –

1. Keep things simple and flexible.

2. Organize a team to do the job, a team who'll work together. No standing on prerogatives. In fact NO STANDING.

3. Define policies, programs, responsibilities and authority – clearly, not too closely.

4. Talk it over on the basis of "What" and "Why"; make a budget, but don't try to detail "How", at the top level.

5. Check progress and results together, use your budget. Accept no Excuses.

6. Face the facts. Be ready for the next step.

7. Keep your eye on the market, your ear on the Sales Department, your needle in the Engineering Department and your shoulder behind Manufacturing.

8. Watch the Big Picture.

And for goodness sake – keep selling!

PLANS, PEOPLE AND BUDGETS

by W. D. Knight*

Toward the end of World War II an economic statistician from the University of Wisconsin was called into consultation by the planning department of a sizeable Milwaukee manufacturing company. The company was interested, as all companies were at that time, in postwar planning. The professor called upon was a man well-qualified by training and experience to discuss general economic conditions, to analyze the prospects with respect to each of the components of the national income, or to bring into play multiple correlation or simultaneous equations, the tools and techniques of the statisticians and the econometricians. He chose instead to ask a number of relatively simple questions most of which could be answered, by relatively simple techniques, on the basis of internal sources of information. What was the relative prewar importance of the major divisions of your product line? Who were your major customers? What industries and what companies? What was the geographic composition of your market? What orders or inquiries have you received for postwar business? What developments, technical, marketwise, and industrial are likely to make the postwar situation different from prewar? In short, he was suggesting that a relatively simple type of sales analysis ought to provide the basic starting point for postwar planning, that most of the required information could be obtained from within the company, and that information from internal sources was likely to be most useful and of greatest practical value for the purpose. What I should like to discuss this afternoon may be described as the rationale or line of reasoning behind these suggestions.

For this purpose I would like to draw again upon the panel of a year ago, to the extent of adopting a case study approach and even to the extent of using some of the material from one of the cases presented on that occasion. In conjunction with this material I would like to use some comparable information drawn from a totally different case developed by one of our marketing students as a part of his doctoral thesis prepared a few months ago. In order to make these two cases manageable for this purpose, the discussion will be arbitrarily confined to a single aspect of each case relating to the initial planning or standard-development stages of the budgetary process. The first case was chosen as one which will be familiar to many of you not only because of its presentation a year ago in New York, or because of several presentations in the Milwaukee area, but because the subject matter, cost analysis and cost control through variable budgeting, is one of the most familiar and widely discussed aspects of the budgeting process. The second case was selected to be as different as possible from the first, involving a different type of company with emphasis on different types of control problems and correspondingly different techniques. Whereas the first case centers around cost control in the operating department of a manufacturing concern, the second will emphasize sales planning as it relates to the control of buying operations in a sizeable mail-order retailing organization. The basic assumption of this procedure is that any features or principles found to be common to two such widely different cases should be of some general interest and should have some application to the particular company in which each of you is interested and active.

Manufacturing Case

The first case from which certain material has been abstracted, as many of you may well have anticipated, is Walter Bunge's three-level variable budget as developed at Allis-Chalmers. The second case involves the sales forecasting and initial sales planning activities of a Chicago mail order house, which prefers not to be further identified.

Allis-Chalmers is, of course, a manufacturer of heavy machinery, produced in considerable part as a job order basis. One of the central problems with which the Allis-Chalmers budget system is concerned, and the one feature of that system with which we are concerned today, is the control of department overhead or of semi-variable costs in the various operating or manufacturing departments. The variable budget system which has been developed for this purpose is built around or founded upon the anticipated level of operations, determined by top management and expressed in terms of direct labor costs for each operating department or cost-center.

The two features of the Allis-Chalmers' budget system selected for our present purposes are:

1. The development of the anticipated level of operations for each department expressed in terms of direct labor costs. These estimates are developed on the basis of management's forecast of total sales volume, broken down by product lines.

2. The development of variable standards for each group of departmental expense accounts on the basis of a series of detailed operating plans developed by departmental foremen and their supervisors. The plans are prepared with reference

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to the expected level of operation, to a level one-third higher, and a level one-third lower, all measured in terms of direct labor costs.

The Allis-Chalmers' budget starts out in a thoroughly orthodox way with estimated billings based largely upon the expectations of product-line managers and of district sales managers. These expectations are reconciled with each other and with management policy decisions to develop a planned sales level acceptable to management. On the basis of a series of reviews and adjustments these expectations are developed into a sales plan by product lines. This plan translated into direct labor hours, broken down by departments, is then the basis for what I am arbitrarily calling the second stage of the budget process.

This second stage consists of a conference with the operating department foreman, in which each department is required to develop a specific operating plan, for the anticipated level of operation. They must decide how many shifts will be operated, what personnel will be needed for each shift, what supplies and services will be required, and what new facilities will be necessary. This plan, developed in the terms of the foreman's day-to-day operations, is expressed in terms of the budgeted expenditure for each department expense account. The process is then repeated, with the same emphasis on specific operating plans, for a level one-third above, and one-third below the anticipated level of operations (measured in direct labor cost). Finally, the three planned expenditures, one for each level of operations for each department expense account, summarized by suitable groups of accounts, are used to develop a straight-line formula, which will show the fixed and variable elements for each budget expense category in the department. The variable budget standards have been developed from "internal sources" in the best meaning of that term. The foreman, who is the key figure in cost control, has participated actively in cost analysis, planning, and in the determination of the variable standards or controls to be applied to his department. The budget development process, because it is couched in terms familiar to the personnel who are to use it, is as realistic and practicable as it can be made.

Mail Order Case

Let us turn now to the mail-order case – a totally different type of situation, with different problems and a different budgetary concept. The mail-order business is a form of retailing in which catalogs or flyers still constitute the principal means of contact with the customer. Merchandising, especially buying and sales promotion, constitutes the key problem, and the buyer replaces the foreman as the key man in the budgeting control situation. Yet the initial, fundamental stages of the budgeting process may again be summarized in two stages, roughly comparable to the two stages of the Allis-Chalmers case:

1. The first stage consists of the development by Top Management, in consultation with outside economists and with its own merchandise managers of the so-called "planned result." This process involves a series of trials and adjustments, taking into account both economic forecasting and major discussions of merchandise policy, and culminating in management's expectations as to total volume of sales broken down by broad product lines and expressed in terms of the expected "pull" of each catalog or flyer.

2. The second stage, based on the planned result, consists of a series of conferences between merchandise managers and buyers, for the purpose of detailed catalog planning in terms of pages, space allocation, color, items and price points. The key concept involved is the so-called publicity ratio, which is the relation of space cost to expected sales for each item. The end product is an estimate sheet for each item or group of items of concern to the individual buyer.

You will notice that the similarity to the Allis-Chalmers procedure is most pronounced at the first stage which produces the planned result, management's expectation as to sales volume broken down by product lines. The considerations involved in both cases are general economic conditions as they affect the company in question, and major policy decisions. The merchandise managers are clearly the opposite number of Allis-Chalmers product-line managers, and the economic consultant undoubtedly considers, among other things, the geographic aspects of the economic outlook.

The "planned result" in the mail order case includes expectations by product lines, and again it is translated into operating language not in terms of direct labor costs but in terms of general promotional plans by major catalogs and flyers.

At the second stage, the selling, the participants and the language are different from the Allis-Chalmers case but the procedure is not altogether dissimilar. On the basis of the planned result, the merchandise managers and the buyers are now to develop the detailed catalog plan by items and pages, and to produce as their end product an estimate sheet for each item or group of items.

The item has replaced the department expense account of manufacturing as the basic expenditure category for which a plan as to standard is required. The "publicity ratio" has replaced the three-level, straight-line cost analysis as the key device by which the desired result is to be achieved. The buyer has replaced the foreman as the key man in the control situation and therefore the key participant in the planning or standard-setting process. The top management expectations and policy decisions which are the point of departure for the whole process, have once again been translated into the day to day operating concepts of the first-level management personnel. In this case that language consists of general promotional plans, expressed in terms of catalog expenditures, rather than direct labor costs broken down by departments. The

end-product, the estimate sheet, is again the basic plan or standard in accordance with which the buyer is to operate, at least for the initial buy, just as the variable budget and the various operating plans associated with it were the plans with respect to which the foreman was to operate in the Allis-Chalmers case. In both cases the operating or follow-up procedure is beyond the scope of our present discussion.

Because of the key role played by the "publicity ratio" it may be well to dwell for a moment on that concept before attempting to summarize these two cases. The publicity ratio, you will recall, is the ratio of space cost in the catalog to expected sales for the item involved. Space cost depends upon such factors as position on the page, color, type of printing, the use of a cut or illustrations, and the treatment of price points or price lines. These factors are the end result of management's expectations and policy decisions as they relate to the particular item in question. The decisions made are based on full expression of the buyer's judgment and knowledge of such factors as changes in the line, style, and demand trends and changes in the competitive situation. By this stage of the process every effort has been made to translate the language of the original planned result into the day-to-day operating language of the buyer and to afford him the fullest possible opportunity to participate in the planning or standard-setting process. These same principles are carried over into the follow-up or rebuying phase of the control problem, which consists of a cooperative arrangement between the merchandise controller on the one hand and the buying staff on the other. For the present, however, we must cut off our story short of the follow-up process and proceed to summarize the two cases now before us.

Comparison and Summary

We started with the Allis-Chalmers as an example of a manufacturing company, characterized in part by job order production of a variety of machinery much of which is of high-unit cost. The key problem on which we have fixed attention in this situation is the control of departmental overhead costs, or semi-variable costs in the various operating departments. The foreman is the key figure in the control process, he is the one who makes each of the expenditures with which the departmental expense accounts are concerned. He is therefore the key figure whose "internal sources" must be utilized. The budget man must talk his language and provide him with the fullest possible opportunity to participate in the planning process. This is done by translating top management plans into terms of direct labor costs by departments, supplemented by some information on product-line expectations. In these terms the foreman is asked to develop specific, detailed plans for three levels of operation. These plans in turn, are the basis for the establishment of the variable standards for each category or class of departmental expense.

The mail-order case was chosen as an example of a distinctly different type of enterprise, concerned with the merchandising through catalogs of a variety of low-cost consumer goods. Here the key problem is buying and to a lesser extent promotion. The buyer is the key figure in the control situation. Management plans are translated into his language in terms of space costs, and he is given the fullest possible opportunity to participate in the development of a buying plan, utilizing his own knowledge of the market and competitive situation. Detailed catalog planning and "publicity ratios," based on past experience tempered by current developments, are the means used, and an estimate sheet giving expected sales by months is the end result.

In summarizing these two cases it seems three points may be said to emerge as the end result of the emphasis on the use of internal sources of information:

1. A check has been obtained on the realism and the practicability of top management's initial expectation or plan. When that plan is broken down by product lines, and reviewed by product managers and sales personnel, inconsistencies and incompleteness are likely to be revealed. Reevaluation often consists of the reconciliation of general plans based in part on outside sources with more detailed prospects and possibilities based on internal sources.

2. In each of the two cases studied the master plan has been developed or translated into the language of the lowest level of expenditure-making and decision-making personnel. This step should greatly increase the foreman's or the buyer's understanding of top management plans and expectations and their bearing on his own particular operations.

3. Because of full measure of participation has been provided at all levels of operation, the cooperation and good will of the foreman or buyer has been earned and is likely to be received.

Conclusion

To conclude this presentation it is convenient to talk in terms of a language which may or may not be familiar in budgeting circles, although it has enjoyed increasing usage for a number of years in both business and academic circles. Even since the famous Hawthorne experiments at General Electric a quarter of a century ago we have been learning more and more about "human relations," "group decision-making,""effective communication" and "individual participation." Last fall at Carnegie Tech when their School of Industrial Administration was dedicated a round-table discussion was held between faculty members and business leaders in which there was reported a Controllership study touching on these points. The central question of that study was whether the controller and the operating man in the department understood one another and cooperated effectively. Mention was made of the foreman's little black book, supposed to contain the data and the information which he considered significant for operating purposes. The suggestion was that this

book was much thumbed and often consulted while the departmental reports supplied by the front office were filed away unsullied and unutilized in a larger book provided for that purpose.

The thoughts which I should like to leave with you in concluding these remarks are (1) that the budget man has a very large role to play in the practical development of effective communication and active cooperation between the various levels of management, and (2) that the translation of management planning into operating language, through the maximum utilization of internal sources of information, is an important means of attaining this goal.

I say these things not with the idea that I am telling you anything that you do not know or do not practice. My thought has been simply that if we were to discuss "internal sources" of information these were the most useful points to consider. To conclude this conclusion let me repeat and leave for possible further discussion the three points primarily suggested as the benefits to be obtained from maximum utilization of internal sources of information in developing budget plans and standards:

1. That by this means a check is obtained on the realism, applicability and practicability of the general plans developed on the basis of outside sources.

2. That the translation of top management plans into the terms of internal records and specific departmental plans and operations, will increase the understanding of these plans by operating personnel, and therefore their usefulness and effectiveness, and

3. Finally, that by considering the operating personnel and their records as a primary source in the establishment of plans and standards, it becomes possible to secure their full participation in planning, and as a consequence their active cooperation in putting the plan into effect.

SELLING THE BUDGET PRINCIPLE*

by H. E. Mueller

While this paper is primarily directed to persons charged with the responsibility for introducing a budget system where none has existed before, it may serve as a refresher for those readers who are concerned with reinstilling an interest in a system already established.

Some years ago, David Starr Jordan, noted educator, said, "The world steps aside and lets him pass who knows where he is going." Speaking generally, a management's stewardship over its company's assets and earning power require that management know where it is going. Today's keener competition, high-priced labor conditions, rising costs of plant replacements are gnawing away at what may have, hitherto, been considered adequate earnings. Facing these problems, many managements have been advised to turn to budgeting. All too often, when they take this advice, it is much in the same manner as a sick man would take to badtasting medicine.

Little is to be gained from scholarly written reports or manuals when the budget is to be sold to a management that has only cautiously opened the door. The job of selling in this case has to be a job of doing, for the very best answers to management's questions will have to be found in its own later experience with the system itself. It should be proved very early that the budget, contrary to what most of the "old-timers" in the organization might think, is not being introduced as a dastardly scheme to check up on expense accounts, or as a trap laid to bare a person's weaknesses or failings. It becomes quite evident that the idea of the budget being something to be gotten out of the way so that people can "get on with their jobs" must quickly be dispelled. The job of selling the budget principle is a matter of proving that the budget is, in plain fact, each person's job expressed as a plan in terms of a common denominator – the dollar. It should be demonstrated that budgeting is merely a systematic, formal, coordinated approach to the collective job of which each member of management is already performing a part. What is more natural than to point out to the executives dealt with that they are already planning objectives in the performance of their respective jobs. It remains but for the budget to get, in every instance, these plans expressed in specific, concrete terms so that the planner and those to whom he is responsible, can appraise his program, compare planned costs of that program with planned accomplishments, measure performance, and take corrective action where necessary.

*A revision of a talk presented at the April meeting of the New York Chapter of the National Society for Business Budgeting. Mr. Mueller is budget director of Congoleum-Nairn, Inc. at Kearney, New Jersey.

Advanced Programming

In order to achieve these general objectives, it is usually well-advised to spend the first month as the company's "budget motivator" interviewing the company's top divisional executives, studying the company's organization, its existing records and accounting statements. These steps are taken with two specific objectives in mind. First, and most important at the outset of an installation, is the determination of what purpose the system is to serve. In most instances where budget systems are not well received, or are not being utilized to their fullest extent, the trouble can be traced to a fuzzy understanding on the part of all concerned as to just what that budget system is intended to do for them in the performance of their jobs. A definition of purpose can best be gotten by engaging in preliminary interviews with top divisional executives before any attempt is made to analyze the organization and its records. It will soon become very evident from these interviews just what voids or vacuums need be filled by the budget. It is well to remember in these opening discussions that the firm turned to budgeting because of a definite need even though in many instances there is not always a clear understanding in management's own mind as to just what that need may be.

The budget should be no mere estimate or projection – the most benefit will be derived if it is set up as a realizable goal of accomplishment – a plan of action, a plan formulated from the needs identified in meetings with the top officials of the company, division heads and line executives. Such interviews usually make it evident that to honestly serve this purpose the budget should be based, for the most part, on definitely outlined programs and not just be the result of applying ready-made ratios, usually averages, to such bases as sales dollars, labor hours and the like.

The matter of an early appraisal of the company's existing records and accounting statements is also very important. Nothing will sink a budget in a small or moderately-sized firm (or in any company, for that matter) so quickly, or so surely, as to have the system bring with it a great deal of added work and reports. Consequently, a sincere examination of the possibility of adapting any of the firm's currently prepared forms or reports is sure to win popularity for the budget, as well as the budget man, for obvious economical as well as psychological reasons.

At the close of the first month or thereabouts a program of action addressed to the President should be written. It should embody a request that he grant the budget official a personal interview for the purpose of reviewing the program. The President's cooperation is usually more confidently gained if a tentative timetable is submitted as a part of the program. This timetable, arranged as a result of the interviews and review of existing controls, should indicate the order in which each of the company's activities will be coordinated under budgetary control. The list should mention not only those particular activities which will give rise directly to income or expense but also those indirect, but related, activities, policy decisions or setting of objectives which will have to be cleared away before the specific courses of action can be planned. The timetable, incidentally, will also provide the budget executive with the opportunity not only to gauge, in his own opinion, the relative importance of each of the areas but to check this opinion with the President in the interview that follows. The matter of having such a definite program precludes the possibility of overlooking some important detail essential to a smooth dove-tailing of closely related budgets.

The advantages to be gained from an advanced programming of the installation cannot be emphasized too strongly. A definite plan, with reasons for the scheme and order of it, makes a very convincing selling point and soon wins the support of the very top official of the firm, the one person without whose support, incidentally, the successful installation of a budget system is not possible.

A Selling Program

Since a fully coordinated system of budgeting closes the gap between the selling program and the other activities of the company an installation is usually best started by getting the marketing division to develop not just a sales forecast but an entire selling plan. The need for more than unilateral planning and action should be constantly emphasized to the top marketing officials. The fact that a knowledge of expected revenues, level of activities, cost and expenses growing out of the selling program and related plans of the other departments will permit a projection of the company's need for productive facilities, manpower and working capital and thus lead to benefits which will work to the advantage of the marketing division, is a sales point not to be overlooked. Constant references should be made to this interdependence which makes it essential that the selling plan, as a part of the company's master plan, be a fully coordinated, completely reasoned and factually supported program. While the budget is never offered in any of these conferences as a panacea, very definite efforts should be made to demonstrate how orderly planning is forcing each responsible member of the company to project on a factual basis, specifically realizable targets and the paths to be followed for their attainment. The very concreteness of the budget soon proves that the selling program has to be in harmony with the opinion, judgment and plans of sales managers and representatives, distributors and those others responsible for promoting and publicizing the company's products and policies. In short, the entire marketing organization with its background and experience has to be devoted to the task of planning and achieving the sales plan through more effectively coordinated merchandising.

It will not be long before the benefits of an improved coordination of selling and promotional plans are illustrating the worth of the budget. The practices of coordination and follow up, which every success-

ful executive is presumed to follow religiously, are not as general as supposed. To solve this problem as it relates to budgeting there are times when it may be found necessary and advantageous to actually ghost write the correspondence between two executives in order to demonstrate the length they need go to properly coordinate their respective plans. In this way the budget executive will best be able to demonstrate the procedures which reason soon should demonstrate to be logical and orderly. This should only have to be done once. The self-evident advantages to be gained therefrom should soon cause the affected executives to work in accordance with the system. Of course, this interrelationship should be carefully spelled out in a top management-approved budgetary procedures manual.

If the timetable implied by this paper appears to constitute a rather hasty approach to the establishment of a budget system, keep in mind that the best installation is most frequently the one where the confidence of top executives is quickly won through a demonstration of the advantages of factually supported, coordinated top-level plans put to paper, i.e., the budget system.

Research and Administration

Having started the ball rolling in the marketing division, the budget installer will then be free to turn his attention to such administrative activities as research and development, and general, sales and plant administration. Much of the critical initiating period is usually well spent in such areas as these since they are usually of most interest to top officials by proximity alone and provide activities where top management can most easily watch the budget at work.

Manufacturing

The aim in approaching manufacturing operations, should be, as in the case of the marketing division, to demonstrate to each executive of this division how the plans of that section of the company in which he was most interested result in activities which are inextricably interwoven in the financial fabric of the company, how the plans of the manufacturing group are as much dependent upon the company's financial condition as they are an influence upon it. In the manufacturing division, however, there is usually one great difference. (Frankly, this cannot always be termed as an advantage.) It is usually comprised of people who, from top executive down to foremen, are already using certain cost control tools. In these controls there are quite frequently very evident weaknesses. However, if it is hard to sell someone into using a new tool it is doubly hard to sell him out of the old one. Consequently, to successfully sell the budget system it is up to the budget executive to tactfully point out just how the existing system will have to be modified so that it will lend itself to a completely coordinated system of control. Notice, the word "modify" is used, for much resistance can be swept aside if an earnest effort is made either to use the tools already in existence or to modify them.

Only when the company's operating plan has been based on a program of critical and constructive analysis can that company feel assured that it has planned itself into the best competitive position possible. The manufacturing executives, that is the department foremen, general foremen, plant managers and service department heads, usually have to be conditioned to taking a fresh viewpoint and making a critical analysis of the operations under their control. Just because "we did it that way before" will not do. This idea of a fresh look, if handled tactfully from the top down, can catch on like wildfire.

The manufacturing division's big gripe is usually found to be that there has never been an estimate of sales, and consequently, production, which would last for more than a month, or two, at best. The objective here, of course, is to first win their confidence with proof that the marketing division has this year – through the devotion of greater effort, better coordination and an actual support of plans submitted – put together a selling plan in which the manufacturing people can have confidence. The manufacturing division should be assured that the sales plan will be reviewed by general management at least once each quarter-year in the light of changing conditions. With this start it is possible to confidently ask the manufacturing officials to set operational budgets to meet a controlled set of conditions and the needs of the particular level of operations planned for a substantial portion of the coming year.

In the last analysis, the over-all objective of a budget system is to exercise control over operations. This, eventually, can only be possible in manufacturing operations through the establishment of standards of performance for the use of material, labor and facilities. However, it will soon defeat the initial purpose, that is, to successfully sell the budget system to management, if a great deal of time is spent during the first year, or two, developing operating standards at factory department level. Consequently, early attention is usually best devoted to those areas where programmed actions and the planned utilization of labor forces – particularly overhead forces such as maintenance, power, plant transportation and the like – can be brought under improved control.

It is suggested that the earliest stages of budgeting deal with planned costs rather than with an intricate system of flexible budgeting. The highly mechanized industry of today with its hard-to-replace service and productive crews has developed more and more costs that do not readily vary with volume. At least reserve, for reasons previously given, the introduction of flexible budgeting, where it might be applicable, to future periods when the operating exexutives affected will have an opportunity to better appraise the applicability of flexible budgets. Under the conditions described above the manufacturing division has the responsibility of securing an optimum balance between costs and productivity.

Cardinal Rules

However, it has not been the intention of this paper

to support any particular type of a budget system. It has been, rather, to stress those matters of everyday practice which are not ordinarily referred to in the textbook and which concern those faced with the problem of either introducing a budget system or reviving an interest in one. In consequence, there are listed below ten cardinal rules worth keeping in mind when selling the budget principle.

These rules are:

1. Determine first the purpose which the budget system is to serve.

2. Plan the installation in a way which will quickly win the cooperation of top management.

3. Make certain that all plans which are to become the factual support for budgets are expressed in writing and approved through appropriate channels.

4. Make the best use of financial and statistical information already available before searching for further data.

5. Wherever possible make reports self-analytical. This will encourage analysis and follow-up action by line executives, a function which all too often is left entirely to accounting or budget executives.

6. Be alert to changing conditions so that budget revisions can be made promptly. Nothing will cause so rapid a loss of interest in the budget as to permit it to go stale.

7. Submit the budget procedure to a manual as soon as it is possible. Write up the portions of the whole budget scheme as soon as a particular procedure has successfully passed through the "pilot-run" stage.

8. Keep the system simple.

9. A salesman for the budget system may not always find himself a welcome member of the business family. Remember that success in the budget installation will largely depend on the degree of tact and diplomacy exercised by the budget executive in offering his counsel and guidance to management.

10. Do not ever be discouraged. Chances are that the cooperation and enthusiasm of a division head or a line executive may have been thought won only to find that a few weeks later, because of some kink in the system, his enthusiasm has waned. The only solution is to sell him again!

One thing is certain, selling the budget principle takes a vast amount of patience and hard work!

SELLING THE BUDGET PRINCIPLE

by C. H. Eckelkamp*

It should be understood that this article is based on the author's observation and experience and is presented in the fashion of a case study with the hope that it may be of some measure of assistance to others.

For a better understanding of what follows the reader should assume that:

1. The Controller of the Company has assigned him the task of developing, installing and operating a budgetary plan.

2. The Company operates seven manufacturing plants, about twenty district sales offices, several subsidiary companies and a central administrative office.

3. Each manufacturing plant maintains a complete set of general and cost accounting records, including payrolls and prepares and submits monthly statements which are consolidated in the central administrative office.

4. All operations are controlled through the central administrative office.

5. The budgetary plan and principles of budgeting must be sold to approximately two hundred individuals from the Chairman of the Board on down to department managers and shop foremen.

There are two facts that should be stated at the outset because they have an important bearing on subject.

1. There is no such thing as a ready-made budget; a budgetary plan is an application of the principles of budgeting designed to fit the operating conditions, policies, etc., of a particular organization and requires careful planning and research. Selling the principles of budgeting is part of the program and must also be planned according to particular conditions.

2. A budget executive, in addition to coordinating facts and figures, must be cognizant of human re-

*Revised from a talk given at the April meeting of the New York Chapter. Mr. Eckelkamp is budget director of Combustion Engineering, Inc., New York, N. Y.

lations, and capable of coordinating viewpoints of many individuals making up management, establishing proper lines of communication between the various departments, selling the principles of budgeting and keeping them sold.

Survey of Organization

The first step in designing a budgetary plan is to survey the situation. This includes a determination of the nature of the business, what the organization manufactures and sells and the manner in which it performs these functions, the preparing or obtaining of a chart of organization and statistical information with respect to past performance.

Secondly, in selling a budgetary plan, it is helpful to know in advance something about your prospective buyers. Learn as much as you can about the people you have to sell – who are they and what are their relative positions and responsibilities; how receptive are they to new ideas; how much time can they afford or are willing to spare to confer with you.

Put these two thoughts together and you have a highly practical approach to "Selling the Principles of Budgeting."

Prepare a Sample of Your Product

If you were engaged in selling a tangible product, undoubtedly you would arm yourself with either a catalogue or a sample of your product, depending upon its size, to illustrate its appearance, describe or demonstrate its usefulness to your prospective buyers. Then, why not create something tangible with respect to anything that you desire to sell – something that your prospective buyers could examine and evaluate.

The answer, with respect to a budgetary plan, is to prepare a written outline of the plan you have in mind. Make it as brief as possible and yet sufficiently complete to capture the imagination and enthusiasm of the reader. As a suggestion it should include such things as:

1. The overall objectives of the plan which could be stated in one paragraph by defining budgeting, perhaps in this manner:

"Budgeting may be defined as a systematic method of predetermining attainable financial results from operations for a stated period and the financial position at the end of that period under given conditions. The purpose of the program is to enable management to organize, plan, carry out, and control the activities of the company for more profitable operation. It provides a basis for measuring financial performance currently against the predetermined financial objectives by means of departmentally developed and controlled expense budgets."

2. Point out that the development, installation and operation of the program depends upon several things:

(a) the whole hearted cooperation of those concerned

(b) the establishment of definite objectives for all phases of the business

(c) an adequate chart of accounts and a general and cost accounting system and

(d) that the entire plan must be welded into a singleness of purpose as indicated under item 1 above.

3. The control features of the plan which result through the establishment of standard units of activity measurement for each department or cost center, which could be readily applied at different volume levels currently as activity increased or decreased.

4. Individual responsibility and participation.

5. Type of budgets: flexible versus fixed, for operating departments; annual budgets for expenditures such as advertising, and capital items.

6. Specimen forms of budget reports, frequency of issuance.

7. End products – forecast of operations and balance sheets; cash forecasts, long term and short term; break-even charts, etc.

8. Time table as to how, when and where you will proceed to develop and install the budgets.

These are your selling points and could be further demonstrated in the form of charts which in turn could be used during conferences with various groups.

Group Meetings – Educational Sessions

Your story must be carried and understood by all levels of management before the procedure can become effective. It becomes an educational program as well as a selling program, particularly at the supervisory level. The best approach is to arrange group meetings. These sessions should be limited to small groups and made up of representatives of related operations having common interests and problems. For this purpose, divide management into two groups 1) Policy Making and 2) Operating, and bear in mind several simple rules:

1. Gear your talk to the relative positions and responsibilities of the members of the various groups. Emphasize the points of most importance or interest to them.

2. Schedule the meetings to suit the convenience of the groups.

3. Clear through proper channels, particularly when dealing with management at the operating level. Arrange meetings with the shop superintendents and foremen through the Plant Manager and invite him to attend.

4. Since there are many phases to budgeting "peddle it in small doses." There is a limit as to how much the mind can absorb at any one session.

Hold several sessions with the same group if necessary; it will help also to maintain contacts.

5. Use large charts or simple black board demonstrations. These aids make it easier for the audience to visualize the subject, and help to break the monotony of a cut and dried talk.

6. Acquaint each of the two groups with the viewpoint of the other.

Management Group 1 (Policy Making) –

This group is relatively small and each member should be furnished with an outline of the budgetary plan in advance of any conferences. With this group you would emphasize the advantages of long term forecasting of operations and financial conditions, cash forecasting on a long and short term basis, the need for a sales forecast and briefly how the budgets at the operating level tie-in with the forecasts and the cost control features.

Management Group 2 (Operating) –

This group is composed mostly of supervisors and must be dealt with in an entirely different manner from group 1. These meetings should be conducted more on an educational line. It is advisable to acquaint yourself with their basic operations in advance of the meetings. Learn their terminology; how familiar are they with shop costs; are they furnished with periodical reports as to standard costs of operation or departmental overhead expenses; do they think in terms of direct labor hours or dollars or units produced.

The sessions should include a restatement of the principles and objectives of the budgetary plan, how their operations fit into the over-all program, their individual responsibilities, the extent of their participation and opportunity to help develop the budget allowances. The supervisors should be encouraged to ask questions and offer for review any particular difficulties they think they may encounter. Place yourself in their position – they are production men and not accountants and in the final analysis, cost control can be accomplished only by the supervisor on the job and not through the issuance of the budbet reports. True, the budget reports are an important step in the program. They inform the supervisor and management as to the achievements and progress being made by the operating departments and maintain interest in the budgetary program. The supervisors should be encouraged to discuss their reports with the budget supervisor and should feel free at all times to call on the services of the industrial engineer or budget supervisor for assistance in correcting bad spots or improving good ones. With this approach their enthusiasm for the budgetary plan will develop rapidly.

Sales Resistance

Undoubtedly, you will encounter some sales resistance, but to what degree is difficult to predict. However, the mention of a few probabilities may be helpful. Let us first consider the budget executive. He could be at fault for numerous reasons and should not hesitate to analyze himself by consulting with his superior the first time he encounters serious resistance. Petty jealousies and politics have a way of creeping into an organization, so that sometimes it depends upon who initiated the plan. Or perhaps, through an oversight, someone may have failed to introduce the plan through proper channels. Then too, depending upon the age of the company, there are the old timers who resist changing any procedures or have a general dislike toward a "new broom man trying to make good." Others will tell you they lived under budgets years ago and the company finally discarded them. Invariably, they have reference to the rigid type of budget in which they had no voice; budget allowances were established by an "efficiency expert" with little or no relationship to volume activity. Resistance sometimes arises from places where you least expect it.

Sales resistance presents a challenge to the budget executive which could at times be more difficult to combat than the physical effort and time required to assemble basic data from the records. Because of the innumerable motives and surrounding circumstances, in the final analysis, the answer to how best to break down resistance must be left to the judgment and ability of each executive.

Conclusion

In conclusion, it is recommended that prior to launching your program, find some means of getting acquainted with your prospective buyers. Participation in company sponsored activities or opportunities to attend periodical department head meetings are two ways. Be patient, take time to listen to the other fellow; he knows more about the operations of his department than you do. He also has problems and you may be able to assist him. Utilize to the fullest extent feasible the experience and talent within your own organization. Be gentle but firm in your decisions but by all means avoid using "big stick tactics."

Two important things to remember throughout the development of the budgetary plan, which includes selling the principles of budgeting, are: (1) you are dealing with individuals; therefore, you must apply various techniques, particularly, psychology and salesmenship and (2) no budget executive ever installed a flexible budget program without being flexible himself.

THE IMPACT OF PEOPLE ON BUDGETS*

The President's Address

by W. J. Edmonds

It has seemed to me that from whatever angle we have approached the subject of planning and budgeting in this conference, we have soon found that we were discussing people. I have taken, therefore, as the subject of my talk, "The Impact of People on Budgets." Perhaps you will recognize as we go along, some of the points that were developed more fully by the able speakers you have heard over the last two days.

The title of my talk allows me to speak about anyone. That is true because people everywhere – politicians, consumers, investors, you and your co-workers – all have a share in shaping your budget or plan for the year. A company grows only because of the planning and work of its employees. The employees, however, must be guided by the decisions of many other people.

I should like to talk first about the decisions of Mr. John Public, the man who elects our politicians; the man who consumes our products and buys our stocks and bonds; and then about the people in the industrial enterprises who are responsible for its sucess; you and your co-workers.

Mr. John Public, tired of inflation, alarmed by the encroachment of government on free enterprise, has made a change. Mr. Eisenhower and his group of policy-makers are bringing about a renewal of faith in our American system of free enterprise. The previous speaker has ably presented the objective of the Eisenhower administration to balance the budget and to reduce inflation. I believe President Eisenhower, Secretary Humphrey, and the Congress are sincere in their determination to balance the budget, and that they will halt inflation. This is important to every individual and every business in the United States. It means that we are at last to escape from inflation as a major driving force in our economy and return to the time-honored incentives. We will substitute thrift for extravagence. We are returning to an environment where business can operate on its own without extensive government intervention. Gentlemen, the signals have been changed. It is a green light for business; the road is open for us. We can find in it a prosperous future if we proceed with caution and remain alert.

Consumer Relations

Planning for business means thinking ahead – thinking about the problems of one's company and its customers, about the particular plans and projects under consideration, and about the broader economic problems. Planning is a means of exercising foresight which though limited, is worth the effort. Our management needs our help; it needs the help of our friends in the financial world; it needs the help of the economists.

Corporate management should be regularly exposed to various but intelligent views on the economic situation as a stimulant to their own thinking about what lies ahead. I, for one, do not feel that there is any danger of my management becoming addicted to the views of any one man. It has been said that if you take economists and lay them all end to end, that each one would point in a different direction. There is one point though on which they are generally agreed; the consumer is in the saddle.

We are waking up to the fact that it is the consumer who in the long run is the principal force shaping the destiny of the company. The success of industrial management is to be found in the way the consumer accepts its products; it is to be found in the uplift of consumer demand and sometimes in the actual raising of the standard of living through constructive and vigorous sales effort. We must all watch the consumer. The consumer will tell you what to produce. The consumer will tell you how much to produce. If you study his needs, and anticipate his demands, I believe your business can be healthy. Some consumers right now are saving more than ever before in peacetime. Others are buying too much on extended credit. But in the net, there is more stored-up buying power than for years. Is the consumer waiting for you to lower your price? Has he heard about those wonderful new products that are on the way? Is he confused by reading consumer reports? I would suggest that it would be helpful to get the answers to questions like those that may be pertinent to your business.

Investor Relations

Mr. John Public is not only the consumer, but he is the potential financier of your business. Whether he is the consumer or the investor, he is expecting more for his money, and he wants to know what he is buying. Our friends in the financial world are performing a great service in this field. Last year, public issues were at a record level. We now hear that a study is being made by the New York Stock Exchange of the best method to merchandise stocks. Installment sales are being considered. Mr. Funston, the President of the New York Exchange, says, "I believe we have a good chance of developing a

*Presented at the President's Luncheon of the Annual Conference of the National Society for Business Budgeting, Milwaukee, May 15, 1953, this address marked the completion of Mr. Edmonds's term as President of the National Society for Business Budgeting.

method to make it easier for more and more people to share directly in the ownership of our productive facilities." The well of savings, in my opinion, because of the reward to old-fashioned thrift that is promised by the fair deal, and because of these modern merchandising methods will not run dry.

Business can get the funds it needs by good financial management, by good planning, and by policies that assure Mr. John Public that you are a growing concern keeping pace with technical and other developments vital to your business. What the investor desires is not just immediate dollar profits, but an indication of sound growth and development. Sound growth and development lies in the ability of management to harness technical developments and team them with capital and manpower in the production of desired commodities or by-products of social benefit. These objectives are achieved by planning and decision. The dual nature of the process – the action of these siamese twins of business – was never better illustrated than by the problem facing business today – whether to retract or whether to forge ahead with new investments. How many of your companies are ready to supply and sell new and improved products? Are they ready to make decisions that mean more work, more profits and more dividends? Do they have a plan that is soundly conceived, tested, and ready for development?

The answer that is coming from nearly all directions is "yes." The McGraw-Hill survey shows that industry planning for three to five years ahead wants to spend more on capital goods this year than even last year – most of it to produce new products and to increase productivity. Industrial management does not accept, any more than the management of our national government, the notion that we are heading into a recession. American business management is not ready to follow the policy of wholesale retreat. It is not ready to throw the responsibility for economic stability entirely back to government where it has remained for too many years. It is aware of the reservoir of personal savings ready for investment in enterprise where management has a record of good stewardship. It is aware too of the importance of securing steady employment and of sharing increased productivity with labor.

Labor and Community Relations

Accepting the principle of a fair deal to labor has brought the voice of labor to bear upon your management and upon your plans of the future. Industrial management today must give careful thought to employment needs for several years ahead and, through budgeting, plan for operations that provide reasonably regular employment to workers. Your employees have demanded better planning. Through you, management is securing it for them.

Thus, at the heart of our planning effort is the goal of a prosperous industrial community. Planning and budgeting are for the help of all the employees as well as the stockholders and consumers. It is in this sense a family kind of budget, and all of the members of the family want to be treated not only equitably but with consideration as individuals. In this industrial community, each person within his own area has an impact upon other people – and the good feeling among people is important to the success of the company effort. Your relations with the people in your organization can establish the atmosphere of give-and-take that facilitates communication and exchange of thought – elements that are so necessary to coordination, the keynote of planning. It is fruitful in any management job to think of people first as people and to like them, and to try to get them to like you. Having succeeded in that respect, it is fruitful to think of those under your authority as means of achieving organization aims, to see that every individual understands not only his own responsibility but also that of all others with whom he deals. A spirit of teamwork and confidence built up around you is worth many times a perfectionist paper job.

Budget men are sometimes included among technical specialists about whom harsh things are said. A specialist has been defined as one who knows more and more about less and less. I am sure none of us fits this description.

As the technical man moves forward in the organization, he tends to be judged less by his technical achievement and more and more by his ability to get along with others and to get things done by working through others. One evaluation is that in the first few years of employment, 75 per cent of the value of an employee is in technical and 25 per cent in other attributes. Ten or twenty years later, however, his other attributes – his leadership ability, his ability to get things done through other people – could be many, possibly ten, times as valuable as his technical aptitude – and his salary in proportion.

The budget man or coordinator enlarges his scope as he makes and maintains contacts. He has the opportunity to obtain the help of people with the best ideas available in the company and to bring to top management the considered, analyzed, and clearly portrayed plans of the entire organization. The impact of these co-workers of yours on the budget should concern us as planners perhaps just as much as the decisions of consumers, politicians, and other people outside the organization. This is because the impact within our company is, to a large extent, within our control.

Planning and budgeting for management exercises management's fullest function. It enables management to make decisions in full confidence that all the facts and all the ideas have been brought to bear that should have been in shaping up the program for the year in accordance with agreed objectives and policies.

Success in budgeting requires that you keep your ear to the ground at all times. It means contact between the management of your company and the public pulse, the shareholders, the workers and the consumers. It becomes the effort to display the decisions and probable actions of these various

groups. A good budget will propose, like Mr. Eisenhower's plan, fair prices, fair wages, and fair profits.

The budget is not built by one man; it is built by many, to establish a basis of performance for a few. It is an institution of democracy, not autocracy. It is an expression of faith in freedom of industrial enterprise, of hope for the future, and proposes charity to all.

Your applause at the beginning I took as a mark of faith – faith that I would not talk too long. Later, no doubt you had a glimmer of hope that I was about through. Now that I am through, I hope you will be charitable and remember that as president of your organization I had a special license to talk – to talk about you and to talk too long.

APPENDIX

NATIONAL ECONOMIC FACTORS IN BUSINESS BUDGETING*

By Yale Brozen

When using economic data to determine the level of activity for which to budget, the budget maker is confronted with an abundance of numbers among which he must choose. The last Federal Reserve Bulletin, for example, carried 80 pages of statistics. The monthly issues of the Survey of Current Business are equally generous. These are only two among numerous publications carrying voluminous data. A list of publications used as statistical sources occupies 32 pages in the Statistical Abstract of the United States for 1952.

Systems of logical relationships have been developed for the purpose of getting some order among these data. These systems are used also to relate national economic factors to business operations. It is the logic of two of these systems which I will discuss today.

Two Equations

The logic of these systems can be readily displayed in the form of two equations. The first can be written simply as $MV = PT$. The second is $Y = C + I + G$.

In the first formula, M stands for the quantity of money in the hands of the public. It includes both currency and demand deposits (checking accounts).

V stands for the velocity of circulation. By velocity, I mean the average number of times a year each dollar is spent.

P stands for the average price attached to the items bought and sold in all transactions. T stands for the total volume of transactions in the economy measured in terms of the number of items in all transactions.[1]

In the second formula, Y stands for the gross national product. C stands for the expenditures of consumers on goods. I stands for gross private investment or the total purchases of capital goods (plant, equipment, increases in inventory) by business firms. G stands for government purchases of goods.[2]

Postwar Forecasts

Now in order to see how these formulae may be used, and are sometimes misused, let us analyze some recent events. First, let us see if we could have understood (or predicted) the postwar era any better if we had used these formulae. You may remember that in 1945 there were forecasts made by government people that there would be 8 to 12 million unemployed in 1946 when war production was to be cut back. And in 1946, 1947, and 1948, the forecast was constantly made that the postwar depression would arrive in a few months.

Some companies acted on these forecasts and were caught short on facilities and materials. They had to make expensive last minute changes or, when they didn't, they saw their industry position deteriorate. Montgomery Ward need only be mentioned to provide an illustration.

If we fill in some data, it will enable us to see what was wrong about these forecasts and why these forecasts were made. Also, it will give us a chance to see what the logical relationships are among certain data that are easily available.

Between 1940 and 1945, the quantity of money jumped from 39 billion to 101 billion dollars.[3] In the same period, the wholesale price level had moved up by less than 40% as against the over 150% jump in the quantity of money. With only the prewar velocity of circulation, we could predict in 1945, a physical volume of sales 80% larger than prewar 1946 if productive capacity were equal to the task. To the extent that productive capacity was not equal to the task of producing 80% more goods in the postwar period, we could expect a rise in the price level – a rise proportional to the amount by which the increase in production would fall short of 80%.

The actual increase in production amounted to only 40% with the consequence that the price level jumped about 25%.

Since the monetary data indicated that we could expect to use all our productive capacity, why did some people forecast a large drop in employment. Those who were making this forecast were relying on the second formula, $Y = C + I + G$.

In the first quarter of 1945, government expendi-

[1] For a more complete discussion of the meaning of these terms and their determinants, see my Textbook for Economics (Dubuque, Iowa; Wm. C. Brown Publishing Company; 1948), Chapter 37.

[2] For an analysis of these terms and the equation, see my Textbook for Economics, op. cit, Chapter 41A, pp. 313-321.

[3] See my Textbook for Economics, Chapters 38, 39, and 40 for a discussion of the causes of this increase in the quantity of money.

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tures were running at an annual rate of $100 billion. Consumption expenditures were 118 billion and investment was $5.5 billion. With a contemplated drop in government expenditures to about 30 billion, it was expected that the 70 billion reduction would cause a great drop in the aggregate demand for goods. It was thought that consumption expenditures would not rise much since per capita consumption was already higher than prewar. Also, it was thought that gross investment could rise to only 24 billion at the outside since even in 1929 at the highest previous rate of capital formation, the ratio of capital expenditures to consumption expenditures had run about 1 to 5.

The mature economy idea led many people to feel that even this rate of capital formation would not be reached. This rate might not be reached since consumption expenditures would fall because these were supposed to be dependent on income generated by government expenditures. This fall in consumption expenditures was expected to reduce the demand for capital goods.

Actually, consumption expenditures rose to 155 billion by the fourth quarter of 1946 and gross private investment rose to an annual rate in excess of 30 billion. This occurred despite a fall in government purchases to 28 billion.

An analysis of where the forecast went wrong is interesting at this time since there has been talk again that a decline in government defense spending will lead to a decline in employment.

The forecast went wrong because of mechanical ideas about relations between income generating expenditures and consumption expenditures. It was thought that the level of consumption spending depended upon the income generated by government spending and private spending on investment. What it left out of account was the fact that there was a very large quantity of money in the hands of people which, if it were not spent in one way, would be in another. Since this money was no longer flowing into the hands of government, for its spending, it was left in the hands of the public. And the public proceeded to spend it in other ways.

Money, Velocity and Prices

The neglected variable in the forecasts that went wrong was the quantity of money. These forecasters thought that consumption spending would drop back to pre-war levels as government spending dropped back to prewar levels. But it didn't because people had 3 times as much money to spend as prewar.

If we wish to determine the level of business for which to budget, one of the magnitudes which should be watched is the quantity of money. You can always get figures which will indicate what is happening to the quantity of money from the once a week statements of the Federal Reserve System published every Friday in leading newspapers.

Now let me turn to a second variable which is important in determining the volume of business. This is the quantity I have called the velocity of circulation.

Our current situation illustrates the importance of this magnitude. Since the first of the year, there has been a small reduction in the quantity of money. Yet production continues to rise and there has even been a very slight increase in the wholesale price index. This may seem anomalous in the face of the reduced volume of money, but it can be accounted for by examining the velocity of circulation. Deposit turnover in New York City in March of this year was at an annual rate of 37.1 times a year as compared to 33.6 times in March of last year. This is a 10% increase in velocity. In other cities, velocity is up from 18.2 to 19.3, over a 5% increase. This rise in velocity has more than offset the decline in the quantity of money.

The increased velocity could have been predicted from the behavior of security markets and business investment planning after the Eisenhower election. Measuring investor confidence by the ratio of bond yields to stock yields, we would have noted the upward movement of this ratio and known from this that investor confidence was increasing. Now the confidence of investors is overwhelmingly important in determining the velocity of circulation. If investors are uncertain or pessimistic, they will hold funds idle. These idle funds, having zero velocity, lower the average velocity of circulation and the aggregate demand for goods. As a consequence, either production or prices must fall if investors become pessimistic. If they become optimistic, the opposite effect will be produced.

With the Republican victory last November, investors became optimistic. We could note this immediately from the behavior of the financial markets. Bond yields were rising, stock yields began falling as prices were bid up, and the ratio measuring confidence rose. From this, we would know that velocity was going to rise. And it has gone up.

Incidentally, velocity now is about 28 times a year. If optimism were to become prevalent throughout the economy, it could easily rise to 40 times a year. It has been known to go as high as 53 times a year. This means that there still could be a great inflation in our economy even if the Federal Government were to avoid increasing the quantity of money any further.

If you wish to get current figures on the velocity of circulation, they are published once a month in the Federal Reserve Bulletin in a table headed "Bank Debits and Deposit Turnover."

Now let us turn to a third factor which is important in determining the level of business activity. This factor is the price level.

Usually, we think of the price level as a variable which is dependent on the other three variables in our equation. Given the prevailing level of production, changes in M or V cause changes in the price level. There are times, however, when the price

level has been controlled directly. Changes in price levels caused by direct control have caused changes in the other variables in the equation, particularly T. Ordinarily, when we think of controls being exercised over the price level, we think of such control schemes as the OPA during World War II or the OPS of the last few years.

However, there are non-governmental organizations which sometimes exercise control over important segments of the price level. In 1936 and 1937, for example, labor unions used the great new powers given to them by the Wagner Act to increase their membership and to boost wage rates. Wage rate indices in manufacturing rose about 15% during the latter part of 1936 and in early 1937. Wage rates are a large sector of the prices which enter into the price index used in this equation. This great increase in the price index, which was not matched by an increase in M or V, meant that there had to be a great fall in the volume of labor hired and of production. The fall that occurred was the fastest rate of decline we have ever experienced in economic activity in this country.

The Second Formula

So far, I have talked primarily in terms of the logic relating the factors that enter into the first formula. Let me turn now to the second formula: $Y = C + I + G$.

This is a far more popular formula than the first, especially among government people. This is probably understandable, first because it is easier to understand and simpler to use (although it is more likely to lead to incorrect conclusions). Also, government people like it for another reason. As one of the members of the Council of Economic Advisors once told me, it is the only formula which specifically gives the government a role to play. By increasing or decreasing G, it may seem that the government can affect the level of the economy. Actually, this is misleading since it is not increases or decreases in G which affect the national income but the way in which increases or decreases are financed.

If we increase government expenditures and impose taxes which take money out of the hands of the people, consumption and private investment spending will drop by an amount which may more than offset the increase in G. If we increase G and sell bonds which compete with privately issued securities for the funds of savers, I alone may decrease by the amount G increases. If we increase G and finance the increase by selling bonds to banks which create the money that they use to buy the bonds, then consumption and investment may, and probably will, increase along with G in monetary terms, although they will decrease in real terms unless we start from a situation in which there is some unemployment. And if it is the unemployment we wish to cure, this could be done without increasing G. All that needs to be done is to reduce taxes, leaving more money in the hands of the public to spend, and finance the resulting deficit by selling bonds.[4]

As you can see, almost any kind of result may flow from a change in G depending on the concomitant public finance arrangements. This is why this simple formula tends to be misleading.

If you wish to use it, and a good many economists and forecasters working for business firms do use this formula, then let us see what may be entered as measures of the different variables. For future consumption expenditures, we can use the consumer survey which is conducted every year by the Federal Reserve Board. Consumers are asked what their spending intentions are in this survey. From it we can get some idea of whether they plan to increase or decrease their expenditures.

Future private investment expenditure plans are surveyed at yearly intervals, and sometimes oftener, by McGraw-Hill, Fortune, and the Department of Commerce. We can usually determine whether increases or decreases are planned from these surveys. Planned government expenditure figures are usually available from public budget documents. Since the Federal Government does most of the governmental spending in this country, federal documents will provide most of these figures.

After assembling these figures, we have a forecast of national income. We might then ask, "Is this a reliable forecast?" The answer is, "It's reliable when it does not matter and unreliable when it does." The 1945 example already given is an instance where we needed a forecast because great changes had to be made in business plans, and it turned out to be very unreliable.

The Early 30's

Could we have predicted such drastic falls in income as occurred in the early 1930's with this method? If you had surveyed consumers in 1929 or early 1930 as to their spending plans, the resulting figure would have exceeded their actual spending. If you surveyed business on its investment plans, the predicted rate of investment would have exceeded the actual rate of investment. Only the government's planned spending would have come anywhere close to actual spending, and in recent years even this figure has been high by many billions.

In 1930, 1931, and 1932, consumers' actual spending fell far short of planned spending because they lost their jobs. Actual investment fell far short of planned investment because sources of finance dried up. Banks which had planned to make loans to business instead were forced to call loans because of panic among depositors.

However, looking at the $MV = PT$ framework, while we might not have forecast the decline in the magnitudes entering this equation before they occurred, the figures would have been known as rapidly as the events occurred. (Actually, we could have done some forecasting because some of the causes of the decline were known before M actually drop-

[4] See my Textbook for Economics, op. cit., chapter 41B, pp. 322-328, for a discussion of this relationship.

ped.) In any case, the decrease in M and V would be recognized as something that would result in a decrease in either P or T. To the extent that prices were not decreased to match the decline in M or V, we would expect a decline in the volume of sales, production, and employment.

Instead of recognizing this, however, we had a plea from President Hoover that wage rates, an important set of prices, be maintained because "American prosperity is based on high American wage rates." After Mr. Roosevelt took office, the NRA and AAA programs were put into effect. The idea back of these measures was that by raising prices back to the 1926 level, prosperity would be restored because, presumably, business and farming would become profitable again. When these programs raised prices, beginning in September, 1933, sales, production, and employment declined. The recovery that had begun six months before was nipped in the bud. Another year and one-half of deep depression had to be endured, as a consequence, ending only when these acts were ruled unconstitutional by the Supreme Court.

Side Relationships

These remarks, I hope, have been sufficient to outline two systems of logic which are or can be used to appraise the effect of national economic factors on business and on the budget making process. A very brief appraisal was offered of these two systems and, while both have their uses, which I have not had time to go into in any detail, one is superior for most purposes.

A system of side relationships exists which can be used to forecast the variables that enter into the two equations. There is not time, however, to describe the whole system of side relationships. I will describe one such relationship which is especially important for people in the machinery industry whose sales ordinarily depend upon the amount of private capital formation.

We can get a pretty good idea of the rate of capital formation that will prevail six months from now by examining two ratios. One is the ratio of corporate profits to the interest rate. An increase in this ratio, other things being equal, will lead to an increase in the amount of gross private investment six months later. The second ratio which influences and can be used in forecasting private investment is the ratio of wage rates to the price of capital goods. A rise in this ratio, other things being equal, will lead to increased private investment six months later.

The reasons these ratios influence investment are easy enough to see. The ratio of corporate profits to interest rates shows the ability to make money on investment relative to the ease of getting money to invest. If interest rates rise, this shows that funds are scarce relative to demand and will bottleneck increases in the rate of investment.

The ratio of wage rates to the price of capital goods is also important because capital goods are bought in order to save labor costs. If the price of capital goods is high relative to labor costs, then not much can be saved. Machinery and other capital goods will not be purchased.

In the 1930's, for example, when purchases of machinery dropped to very low levels, wage rates were much lower relative to the price of capital goods than they had been before or than they have been in recent years.

At this point, let me inject a word of caution in the use of the ratio of wage rates to cost of equipment to <u>influence</u> the rate of investment. It might seem that an increase in wage rates, thus raising the ratio (assuming cost of capital goods does not rise by an equal proportion), would increase the rate of investment. However, the result of this would also be a decline in the ratio of corporate profits to interest rates. This would offset the influence of the other ratio. A decrease in the price of capital goods would be somewhat more effective in increasing the rate of investment, but its primary effect in the early 1930's would have been a rise in interest rates since the supply of investible funds was restricted by the banking contraction, and its secondary effects, occurring at this time.[5]

Please let me apologize for the brevity and compactness of this sketch of economic logic. However, I understand there will be time for questions. I will be glad to amplify any points you wished discussed.

[5] See my <u>Textbook for Economics</u>, op. cit. pp. 327.

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